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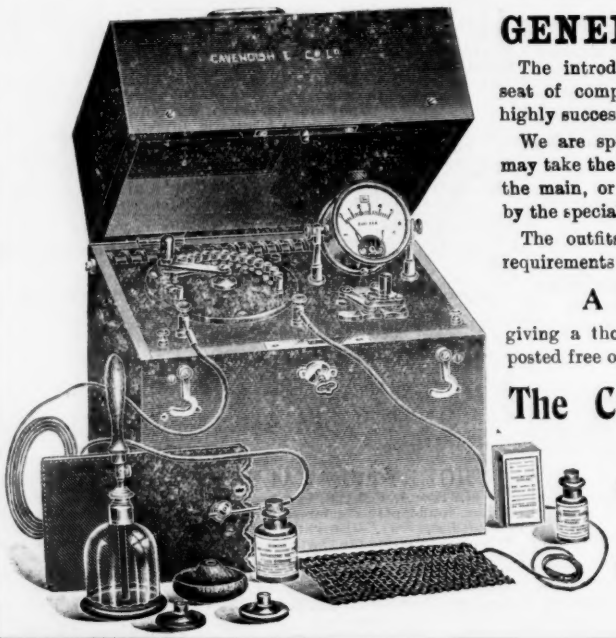

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An Address

ON

SPINAL CURVATURES AND THEIR TREATMENT BY PHYSICAL EXERCISES.

Delivered before the Windsor and District Medical Society at the Guild Hall, Windsor,

BY RICHARD TIMBERG, M.R.C.S. ENG., L.R.C.P. LOND., G.D. STOCKHOLM,

MEDICAL OFFICER IN CHARGE OF THE PHYSICAL EXERCISE AND MASSAGE DEPARTMENT AT ST. THOMAS'S HOSPITAL, LONDON.

MR. PRESIDENT AND GENTLEMEN,—When asked to read a paper before the society I acceded with great readiness and much pleasure, suggesting at once some subject in connexion with spinal curvatures. The exact title which I have now chosen indicates (as you might have expected) that I will deal with the question principally from the point of view of its treatment by exercises and allied measures.

GENERAL PATHOLOGY.

[Before entering upon the treatment of spinal curvature Mr. Timberg cleared the ground by describing its general pathology. Spinal curvatures, he said, were classified according to etiology or according to the particular direction of the curves; from the former point of view two subdivisions were given: (*a*) due to primary affection of bone; (*b*) due to some fault in the muscular and ligamentous structures. Amongst osseous affections rickets and caries were considered, other rarer causes merely referred to; spondylitis was dealt with as an affection intermediate between the osseous and ligamentous. Turning attention to the second main group of curvatures, those where the primary cause is to be found in the muscular and ligamentous structures, he recognised three different factors that influence the shape of the spine and which might tend to produce abnormal curves in it. They are, firstly, the support upon which the spinal column rests; secondly, the distribution of the weight which it has to carry; and thirdly, one-sided muscular action upon it. After a few remarks on the normal shape of the spine, on the occurrence of the four physiological curves in the antero-posterior direction—any physiological lateral curve being denied—and on the various directions and degrees of the pathological curves, the lecturer proceeded to trace the mechanism of how the various curvatures are produced by these three factors:—]

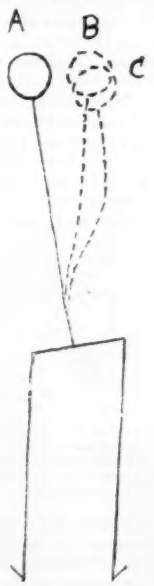
With regard to the first, the support upon which the spinal column rests, this might, in the first instance, be said to be the pelvis; and there may be simply developmental inequalities in the two sides of the pelvis which reflect upon the position and shape of the spine; but a much more usual occurrence is that the pelvis itself is tilted by an inequality in the length of the legs from whatever cause: error of development, disease, or accident.

Supposing, for instance, the left leg to be shorter and the pelvis thus tilted towards this side (Fig. 1), the spinal column, too, would naturally point towards the left side, if it maintained its normal right angle to the intertrochanteric axis. Such a position would, however, entail by far too great a muscular exertion, and therefore the body is soon brought into balance by a contraction of the muscles on the right side of the spine. A large convex lumbar curve is in this way produced; and if it stops at this well and good. It is Nature's way of making up for any accidental shortening of a leg, for instance, by a fractured femur; and a difference of up to an inch can be made up for in this way without any detrimental effects to a normally strong and muscular subject. In weak and undeveloped individuals, on the other hand, the correction is likely to be carried too far, so that the body will be brought over to the right side, and a compensatory cervico-dorsal curve with the convexity to the right will then be induced to counteract this loss of balance.

The obvious way of treating these so-called statical curvatures is gradually to raise the sole of the boot under the shorter leg or to make up for any inequality of the pelvis by a slanting seat until the tilting of the pelvis is corrected. The curves of the spine already produced can then generally be easily dealt with by special exercises, about which further later on.

Antero-posterior curves can also be caused by a similar faulty position of the pelvis. A tilting forward will, for instance, occur in a case of congenital dislocation of the hip-joints, or it may be caused merely by deficient strength of the extensors in the hip-joints, the hamstring and glutei muscles, in bringing the pelvis into balance. Any such tilting forwards of the pelvis will of necessity lead to lordosis, and a compensatory kyphosis is likely to follow. On the other hand, the physiological antero-convex curve in the lumbar region can be reduced or obliterated by a kyphosis continued down into this region if the pelvis is tilted to any degree backwards. As we know, there is in our natural upright position a constant tendency to hyper-extension in the hip-joints, which, however, is normally resisted by the Y-shaped ligament on the anterior aspect of the joint, any continuous muscular exertion thus being saved. Should now any yielding occur of this ligament, a tilting more or less backwards would take place and a lumbar kyphosis made possible.

FIG. 1.



Diagrammatic representation of the occurrence of a statical curvature from shortness of left leg. A, Position of spinal column as it would appear if its relation to the intertrochanteric axis were maintained. B, Spinal column brought into balance by muscular action, with consequent left convex lumbar curve. C, This action carried too far and the balance again restored by a compensatory right convex thoracic curve.

The second of the mentioned causes of spinal curvature—i.e., "the unequal distribution of the weight which the spine has to carry"—is best illustrated by a case of torticollis. A long-standing condition of this kind is sure to bring about a curve of the cervical spine, and the process of secondary curves will occur here too, although in an opposite direction from above downwards. Other instances of the same nature is after amputation of one of the upper extremities, or when any external weight of any kind is habitually carried on one side.

Still, in both these instances our third factor is at work as well: "that of unilateral muscular action on the spinal column." Let us try to analyse how a preponderant use of one hand and arm will affect the spine. It is, of course, the right hand that is more often used in this way, and for its efficient working the scapula of the same side need to be fixed. This is secured by the action of the muscles connecting this bone with the trunk, the most important of them being pectoralis minor, serratus magnus, levator anguli, scapulæ, the rhomboids, and trapezius. These muscles require in their turn a firm origin from the spinal column,

which is obtained by a contraction of the spinal muscles of the opposite side; and if now at the same time the right arm is raised, which it generally would be, and perhaps supporting some weight in addition to its own, the upper part of the spine would naturally be leaning over to the left side. A frequent repetition of such a position will soon make it permanent, a primary dorsal curve, with its convexity to the right, thus being formed.

At first it is merely a lateral deviation, but an added rotation of the interested vertebræ will soon convert it to a more or less fixed scoliosis. This rotation of the spine seems to form something of a mystery to some learned men, but to my mind it is a simple and easily comprehensible result of the muscular action upon the vertebræ, although I do not know that I have ever seen any statement to this effect. The muscles passing between neighbouring vertebræ (and still more when their fibres skip two or three vertebræ before becoming attached) will naturally tend to take the shortest course between their origin and insertion, and thus, instead of following the arch of the curve, they will try to occupy the position of a string to a bow. As this tendency of the muscles obviously acts strongest on the spinous processes, these will thus come to approach the middle line, and the bodies of the vertebræ, on the other hand, be twisted towards the convexity of the curve. This applies to any part of the spinal column, but it is most noticeable in the thoracic region, as the ribs are there taking part in the deformity, becoming much more prominent on the convex side at the back and correspondingly depressed in front. A costal hump is thus formed, not to be confused with the angular hunchback after Pott's disease. In fact, the whole shape of the thorax is altered, the costal angle becoming much more acute on the convex side and obtuse on the concave. (Fig. 2.)

FIG. 2.

Diagrammatic representation of a transverse section of the thorax in a case of right convex curve. Note spinous processes of vertebræ directed towards the middle line and prominence of ribs posteriorly on the convex side, with abnormal acuteness of the costal angle.

The organs of the thoracic and upper abdominal cavity cannot fail to be influenced by such a deformity of the chest; and if we to this add that the ribs on the convex side become spread apart, whereas on the concave side they become crowded together so that intercostal pains are often produced by the pressure, and the ribs even made to atrophy, we can then, I say, realise what a serious condition a spinal curvature actually might become when affecting the thoracic region. A lumbar curve is in itself not quite so detrimental, but there is always the risk of its continuing down into the sacrum and deforming the pelvis, thus in females leading to serious consequences with regard to possible future pregnancy and parturition.

In diagnosing a case of scoliosis it is therefore not sufficient merely to take notice of the line of spinous processes. These tend, as I said, to approach the middle line, and might, therefore, often make the curvature appear less than it really is. One point of greater diagnostic importance is the shape of the space between the outline of the trunk and the arm on either side. In a right convex dorsal curve the right arm would thus hang close to the body in the upper part and away from it lower down. (Fig. 3.) If the same single C-shaped curve were continuous through the whole of the back this effect would be still more marked, as the hip of the left side would then be rendered prominent. (Fig. 4.) The left scapula would in either of these two cases be lowered.

The relative level of the scapulæ and hips respectively thus form another point of great diagnostic significance. In cases where a secondary curve has occurred in the lumbar region, making the other hip (the right side) prominent, the appearance of the arm spaces is again altered. (Fig. 5.) In our present example it becomes triangular on the right side and crescentic on the left. I speak advisedly of prominence of the hip and not of a raised hip, as the one *may* occur without the other. In most cases it is, however, raised as well, and this point is best settled by noticing the level of the two anterior superior spines.

To ascertain whether any rotation of the spinal column is present, the best way is to let the patient bend forward and

FIG. 3.

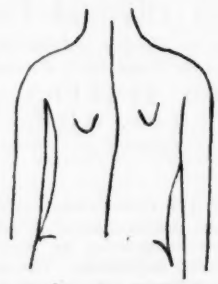
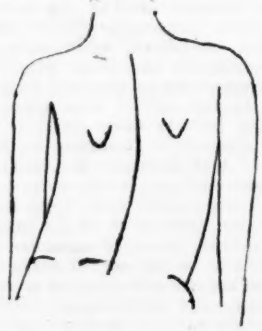


Diagram of a right convex thoracic curve. Note the different shape of the space between the arm and the outline of the body in either side, also the lowering of the left scapula.

then to notice against a dark background the outline of his back at different levels. Any prominence in either side of the middle line will then easily be detected. In our last instance such prominences would naturally be likely to be found on the right side in the thoracic region, and on the

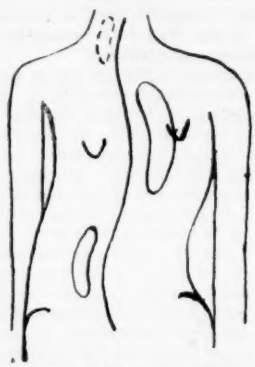
FIG. 4.



A right convex curve continuous throughout the spine. Note arm spaces, lowering of left scapula, and raising of left hip.

left side in the lumbar, and it is quite conceivable that a third compensatory curve might have occurred in the cervico-dorsal region, also accompanied by a rotation. (Fig. 5.)

FIG. 5.



Right convex thoracic and left convex lumbar curve. Note arm spaces, lowering of the left scapula and prominence of the right hip, also the backward protrusion at each convexity due to the rotation of the spinal column.

Turning now our attention to the question of treatment of spinal curvatures, there are, of course, admittedly many useful agencies in addition to physical exercises, such as

general constitutional treatment with good food, fresh air, and other tonics, rest, change of occupation, artificial supports, baths, electricity, massage, &c. Still, for the great majority of cases exercises are indicated often in combination with one or more of the above-mentioned other methods of treatment. The ideal aim is obviously to correct the curve so as to restore the spine to its normal shape; and this is very often possible by means of suitable exercises. These should be directed towards increasing the power of those muscles, or rather groups of muscles, that are weakened—i.e., on the convex side of any curve—and towards again stretching and restoring to normal length the muscles on the concave side, which are over-active and contracted. At the same time endeavours should be made to correct or over-correct the existing curves by applying pressure upon their highest convexities, and by choosing such positions as will enable the law of gravity to aid the muscular action in this direction. Any constant or frequently repeated position or movement that can be discovered causing the curvature should naturally be avoided.

With regard to the prognosis, this is obviously better the earlier a curvature is discovered and can come under treatment. The simple lateral deviation is generally easily amenable to treatment; and a curve in the second degree of severity—i.e., a true scoliosis, but not yet fixed—is, in favourable circumstances, capable of perfect recovery. Still, even in the numerous cases where the ideal of a cure cannot be reached by any known means, judicious exercises can do much good in effecting more or less improvement, or, at least, preventing the deformity from getting worse, increasing the patient's strength and power of carrying what is left of his deformity, relieving pain (as well as muscular aching and feeling of fatigue, as the pain caused by pressure), rendering the spine more moveable and at the same time the chest, thus lessening the detrimental consequences to the patient's general health. These benefits are very considerable, and one has to be content if these can be attained. In unfavourable cases it is often necessary to adopt some form of spinal jacket in addition to exercises.

A forcible correction, under anæsthetic, of any fixed curvature is, on the other hand, strongly to be condemned. You remember perhaps that such a course was advocated a few years ago by the French surgeon Calot. He used excessive pressure on the curve, while four assistants held the patient by one arm and leg each. Without counting the immediate danger of such a proceeding, the possible advantages to the patient were very doubtful, for a weak and wobbly spine is but a poor substitute for a strong and firm back, even if possessing an angular curve.

TREATMENT BY EXERCISES.

In giving examples of the actual exercises employed I will classify them according to the particular form of curvature for which they are suitable, and within each such group I will place first those exercises that are simple enough to be done, after some tuition, by the patients themselves without any expert aid. In order to avoid too much repetition it will be best to start with a list of exercises that lend themselves for any form of curvature.

One object to be kept in view in the treatment of all kinds of spinal curvatures is the improvement of the shape and mobility of the chest, and for this purpose breathing exercises should always be introduced. In order to make them at the same time corrective of the existing curves, or at least to avoid any risk of the curves being accentuated by the movements, it is a wise precaution to let the patient perform them while lying flat on the back or standing with the whole of his back supported against the door-post.

Exercise No. 1.[1]

(*a*) *Lying* (flat on the back with the arms and the palms of the hands pressed to the sides). *Lifting both arms* forwards and upwards, while breathing in, and bringing them back again outwards and downwards to the sides while breathing out (six to eight times, slowly, in time with deep breathing).

(*b*) *Standing* (with the back from head to heels against some support, such as the door-post; the arms pressed to the sides). *Lifting both arms* outwards and upwards while breathing in, and lowering them outwards and downwards while breathing out (six to eight times, slowly, in time with deep breathing).

Another simple form of exercise that opens up the chest, strengthens the inspiratory muscles, and tends to straighten the spine by active muscular effort is arm bendings and stretchings, and the way in which these movements can most safely be done is the following:—

Exercise No. 2.

Standing (with the arms by the sides). (*a*) *Bending both forearms* up, so that the fingers slightly bent touch the outer part of the shoulders, and from that position *extending both arms outwards* (the palms turned down), then bringing them into the bent position, and from there down to the sides again (two to six times; each movement quickly, but stopping in the different positions). (*b*) *Same exercise*, but extending the arms *upwards*.

Hanging exercises have a still more marked effect on the inspiratory muscles and on the chest, and the mere weight of the body will here help to straighten the spine. These positions can be made more strongly corrective of any special curve by applying manual pressure to the height of its convexity; but it has then to be remembered (with regard to the lateral curvatures) that the pressure should be applied in the right direction, from behind forwards, as well as from the side, so as to meet the rotation of the spine as well as the lateral deviation. There is otherwise a great risk of increasing the already abnormally acute angle of the ribs on the convex side. (Compare Fig. 2.)

For our present purpose the most suitable hanging exercise is—

Exercise No. 3.

Hanging (from a bar, trapeze, or similar support, with the hands kept as far apart as the width between the shoulders). *Parting and closing the legs* with the knees kept straight (two to six times; repeat the whole exercise two or three times).

The leg parting and closing is added not only to serve as a measure of time for the hanging but also in order to make the patient relax his over-acting spinal muscles, so as to let the weight of the lower part of the body more fully extend the spine.

FIG. 6.

"Suspension." (For this and the other photographs illustrating this paper I beg to acknowledge my indebtedness to Mr. W. M. Lupton of St. Thomas's Hospital.)

Exercise No. 4.

Standing (with the back resting against a door-post, the arms hanging perfectly loose by the sides, the feet parted and placed some few inches forward from the post). *Bending the body* forwards and downwards with the head and arms drooping down; then *raising it up* gradually, so that each vertebra of the spine in turn from below upwards may, if possible, touch the door-post (two to four times; repeat twice).

[1] This and several other of the exercises described below will also be found in the author's book on "Home Exercises for Spinal Curvatures."

This exercise will bring the spinal muscles into more active use, and will increase the mobility between the various vertebræ. It will thus tend to straighten slighter degrees of lateral curvatures. When properly performed its principal effect is, however, to correct antero-posterior curves; lordosis is corrected by the hamstring and glutei muscles being made to tilt the pelvis backwards, the lumbar spinous

FIG. 7.

Self correction with belt.

processes thus being brought to touch the support; and kyphosis is corrected by the straightening of the upper part of the spine. In this latter part of the movement care has, however, to be taken that the lordosis is not allowed to recur.

Exercise No. 5.

Lying (flat on the face with the arms and the palms pressed to the sides). *Raising the upper part of the body* a short distance only, but with the shoulders well drawn back (two to four times).

A stronger muscular exertion than in the previous exercise is here obtained, acting in the same manner, corrective of slighter degrees of lateral curves. This requires careful watching in cases of antero-posterior curves in order that the effort may be localised in the proper part of the back—i.e., the scapular region. There is otherwise a great risk of a lordosis being increased or produced instead of a kyphosis being corrected.

Exercise No. 6.

Sitting (astride a chair with the hands bent up to the shoulders, the elbows kept close to the sides and the forearms brought well outwards). *Twisting of the body* from side to side (two to six times each side).

Twisting of the body executed in the position just described or (to get a stronger effect, although less easy of control) in the standing position with feet parted and arms extended outwards, is of value in order to increase the mobility of the spinal column, and at the same time of the chest, thus facilitating free respiration.

Exercise No. 7.

"*Suspension*" by means of a halter supporting the patient's chin and neck. (Fig. 6.)

This is a sort of glorified hanging exercise (compare Exercise No. 3). The method is to attach the halter, by means of a rope and pulleys, to a fixed point above the patient, and then to let him take hold of the running end of the rope above his head, and by means of this hoist himself up as high as he can when standing on tiptoe. If there is a marked difference in the level of the scapulæ the hand of the side where the scapula is lower must always be made to grip higher up on the rope. The patient should now try, without paying out the rope, to lower his heels again towards the ground as far as possible. A marked straightening of the spine will then generally be noticed. It is an important point to let the patient pull the rope himself, not only because of the correction thus obtained in the shoulder level, but also because there is in this way no fear of accidental hanging or anything approaching to it. For he must obviously either bear his weight on his toes or support it on his arms, and any undue strain on the neck is thus effectually prevented.

Exercise No. 8.

The specially devised belt depicted in Fig. 7 affords one useful way of helping a patient to correct his curvatures by his own muscular efforts with the aid of his arms. The belt is fastened round the patient's body between the iliac crests and the trochanters, with straps passing diagonally across from back to front above the iliac crests, and from this belt two handles are suspended, one on each side, which the patient is made to grasp. He is then directed to walk forwards and backwards on tiptoe, holding himself as erect as possible. Frequent supervision is, however, necessary to prevent faulty positions such as undue raising of the shoulders.

In dealing with individual curvatures we will first consider those in the antero-posterior direction.

Exercise No. 9.

The most important movement for a faulty carriage of the head (stooping or poking the chin) is *bending the head* slowly backwards and raising it up again by drawing in the chin (four to eight times). The

FIG. 8.

Postural correction of lordosis and active muscular correction of kyphosis.

effect might be increased by someone offering resistance to the movement by a hand placed behind the neck. In either case it is essential that the movement takes place not merely between the atlas and occiput but throughout the whole of the cervical spine.

In a case of kyphosis continuous throughout the whole of the back, Exercise No. 5 might with advantage be modified by raising the body as far as the individual is able. When kyphosis coexists with a lordosis such positions and movements must be chosen as do not increase one curve while

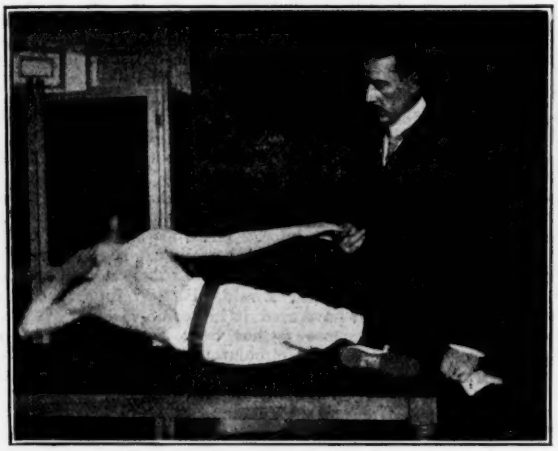
correcting the other. One exercise that meets these requirements is—

Exercise No. 10.

Sitting (facing a wall, some 2 to 3 feet distant from it, with the arms extended upwards). *Leaning the body* forwards from the hip-joints, with the spine kept straight, until the hands touch the wall at the highest possible point (four to eight times).

The principal exertion is here localised to the scapular muscles, and the exercise is thus corrective of kyphosis,

FIG. 9.



Active correction of right convex curve.

while the leaning forward on a low seat prevents lordosis from occurring. (Fig. 8.)

Exercise No. 11.

Lying (flat on the back, with the arms extended upwards and the hands grasping some support). *Drawing up both knees* and then bringing the legs down to the original position again (four to eight times). To increase the effort the same movement might be arranged in a hanging position.

Here, on the other hand, the kyphosis might be said to be mechanically prevented by the position, while the lordosis is more actively corrected.

With regard to lateral curvatures more difficulties present themselves, and it is here that expert help becomes a necessity in all but the very slightest cases. (In describing the exercises for lateral curvatures we will consistently suppose the thoracic curve to be right convex and the lumbar curve to be left convex. For the opposite condition right and left should naturally be reversed.) A unilateral C-shaped curve can be met by the following two exercises:—

Exercise No. 12.

Sitting (astride a chair with the left hand behind the neck and the right arm hanging down by the side). *Bending the body* to the right side and raising it to the upright position again (six to ten times).

Exercise No. 13.

Lying (on the left side with the left hand behind the neck and the right arm extended along its own side of the body). *Raising the upper part* of the body straight towards the right side (three to six times).

The action of Exercise No. 13 will be easily understood from Fig. 9. The different position of the two arms helps to counteract the inequality in the level of the shoulders, and the position of the body entails a powerful contraction of the muscles of the convex side.

Exercise No. 14.

Sitting (with the feet parted and firmly resting on the floor, the body leaning forwards from the hip-joint). *Extending the left arm* upwards (three to six times; repeat the whole exercise three times).

The active correction of the inequality between the scapulæ is still more marked in this movement, and it is best done with the help of someone who, standing in front of the patient, can steady his body by placing one hand on the convexity of his curve, and at the same time with the other hand offer some resistance to the extension upwards of the left arm.

A lumbar curve (with the convexity to the left) is efficiently treated by one of the two following exercises:

Exercise No. 15.

Hanging (from a bar), *bringing both legs* over to the left side, and keeping them there for a few seconds (three to six times; repeat twice).

Exercise No. 16.

Standing (with the left foot two foot-lengths in front of the other; the left side resting against the edge of a table or similar support, placed at the level between the iliac crest and the trochanter). *Bending the body* over to the left side (six to twelve times).

The next exercise provides one very effective way of passively correcting a lumbar curve.

Exercise No. 17.

Lying (flat on his face), while his legs are grasped and brought over to the left side by the operator, who at the same time by his other (left) hand placed on the height of the convexity steadies the patient's body and localises the movement to the desired part of the spine (Fig. 10).

This performance enables the operator at the same time to give any desired amount of torsion to the pelvis, thus, so to say, "untwisting" the rotation of the spine which may accompany the lumbar curve. In cases of double S-shaped curvature this exercise can be used for the lower curve, if precaution is taken that the bending over to the side is actually produced at the right situation; and for the thoracic curve a corresponding reduction can be obtained by securing the lower part of the body and passively bringing the upper part over to the right side.

Exercise No. 18.

Sitting on the buttock and thigh of the side where the hip is *lowered* (the left). *Extending the other* (right leg) backwards as far as possible. *Leaning the body forwards* in line with the hind leg. *Extending the arm* of the side where the scapula is lowered (left) upwards in line with the body, and the *other arm* (right) downwards and backwards. (Maintain this position 15–50 seconds; repeat three or four times.)

Careful instruction is needed for the patient to occupy this position properly (Fig. 11), but it is then admirably adapted to counteract all the various malpositions of a double curve. By the position of the legs the relative level of the two hip crests is reversed, and a lumbar curve temporarily over-corrected; by leaning the body forward all the spinal muscles are called

FIG. 10.

Passive reduction of a lumbar curve.

into activity to maintain the position; and by the position of the two arms the difference in the level of the scapulæ tends to be counteracted and the thoracic curve to be corrected. Positions of this kind form the essential feature in Professor Klapp's so-called *crawling method* of treating spinal curvatures.

In conclusion, I will describe one method of dealing more directly with the rotations of the spinal column, which are

always the most difficult part of a curvature to influence. For this purpose I employ an indiarubber band (3 ft. 6 in. long

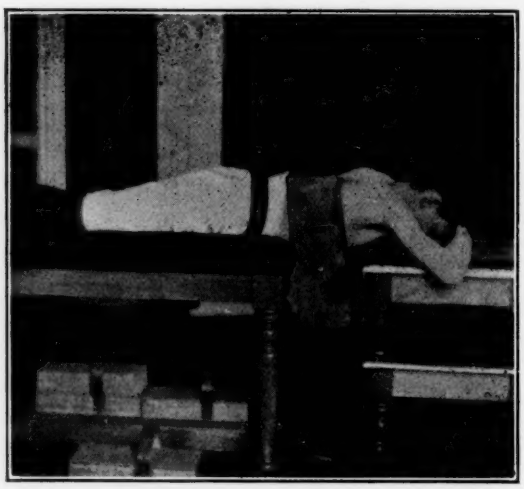
FIG. 11.

Corrective position for double lateral curvature (right convex thoracic and left convex lumbar).

by 5 in. broad and ¼ in. thick), which is used in the following manner (Fig. 12).

Two tables are placed 8 to 10 inches apart, and the patient is made to lie prone across them, so that the part of the back to be dealt with is spanning the gap between the two tables. The indiarubber band is now applied to the bare skin in this section of the back over the convexity of the curve with its end close to the spinous processes. It is then wrapped round the body, its free end hanging down on the convex side, thus overlapping and retaining in position the first part of the

FIG. 12.



Application of indiarubber band to correct rotation of the spine.

band. A suitable weight (3 to 12 lb.) is now suspended from this free end, and a powerful torsion of the required part of the body is thus obtained. The position should be kept up for some 5 to 15 minutes.

The above does not, of course, claim to be a complete list of the exercises and positions used in the treatment of spinal curvatures. Only a few typical examples have been given.

OMNOPON: A POTENT ADJUVANT TO LOCAL ANÆSTHESIA.

BY H. M. W. GRAY, M.B. ABERD., F.R.C.S. EDIN.,
SURGEON AND LECTURER ON CLINICAL SURGERY, ROYAL INFIRMARY, ABERDEEN; SURGEON TO THE ROYAL HOSPITAL FOR SICK CHILDREN, ABERDEEN.

OMNOPON (as it is called in this country) or pantopon (the name used on the continent of Europe) was introduced by Professor Sahli[1] of Berne, in conjunction with the late Dr. Schärges, as a medical sedative. It is sold in liquid, powder, or tabloid form, but is almost universally used in the liquid condition. It is made up in various strengths and combinations by the Hoffmann-La Roche Chemical Company, and sent out in sterile ampoules of usually 1 c.c. capacity. It is a watery solution containing nearly 90 per cent. of the soluble alkaloids of opium in chloride form. It is faintly acid in reaction, but not sufficiently so to be irritating when injected into the tissues. Opium itself contains 14 to 15 per cent. of its total alkaloids, so that 1 gramme of omnopon is equal to 5 or 6 grammes of opium. Sahli gave the name pantopon from the Greek $\pi\alpha\nu$ = all, and $\acute{o}\pi\acute{o}s$ = juice. There are about 20 alkaloids in the preparation, and they are present in the same relative proportion as in opium. It has been widely used in medical practice, e.g., by Sahli, Ewald,[2] Pertik,[3] Innsbruch,[4] and Haymann.[5] They have used it in cardio-vascular disorders as a sedative because it has been found to have no depressing effect on the circulation; in diabetes insipidus, in which it produced improvement in the general condition with marked reduction of the quantity of urine excreted; in laryngeal and pulmonary tuberculosis, and in tumour of the lung, where it gave much better and more lasting results than morphia as a sedative, hypnotic and antidiarrhœic. In mental cases it was found to be a good sedative, and in fact it is used in many clinics instead of and in preference to morphia. In gynæcological and obstetrical practice it has been used with gratifying results by Gräfenberg,[6] Johannsen,[7] and Heimann.[8] It has been found that there was no lengthening of the labour on account of weakening of the pains and all the children were born alive. (Gräfenberg,[6] number of cases not given.)

A great deal of experimental work has been done with the drug in practically all continental countries. The most important deductions from such experiments (Bergien,[9] Rodari,[10] Loewy,[11] Wertheimer-Raffalovich,[12] Rodolico,[13] and others) show that the circulation of the blood is absolutely unaltered by therapeutic doses; in fact, Rodolico found that the heart acted more strongly, while the pulse became slower and fuller. The respiratory centre is less influenced by omnopon than by morphia, as regards volume and rate of respiration, and also that the effect passes off more quickly than that of morphia. The narcotic, sleep-producing effect is very marked, and usually appears without any previous stage of excitement. It has been found further that the gastric secretions are increased, but later the motility of the stomach and intestines is reduced (Rodari), this being accompanied by ischæmia of these parts.

The good qualities of the drug were soon appreciated by surgeons in Berne and elsewhere (Brustlein[14] and von Brunn[15]) on the continent, who began and have continued its use, coupled with scopolamine, as an aid in the administration of inhalation anæsthetics, in the same way as the

[1] Sahli: Therapeutische Monatshefte, January, 1909; Münchener Medizinsche Wochenschrift, 1910, No. 25, p. 1326.
[2] Ewald: Berliner Klinische Wochenschrift, 1910, No. 35, p. 1609.
[3] Pertik: Deutsche Medizinische Wochenschrift, 1910, No. 36, p. 1661.
[4] Innsbruch: Deutsche Medizinische Wochenschrift, 1910, No. 20.
[5] Haymann: Münchener Medizinische Wochenschrift, 1910, No. 43, p. 2238.
[6] Gräfenberg: Deutsche Medizinische Wochenscrift, 1910, No. 34, p. 1569.
[7] Johannsen: Zentralblatt für Gynäkologie, 1911, No. 19, p. 702.
[8] Heimann: Münchener Medizinische Wochenschrift, 1910, No. 7, p. 357.
[9] Bergien: Münchener Medizinische Wochenschrift, 1910, No. 46, p. 2409.
[10] Rodari: Therapeutische Monatshefte, 1910, No. 10, p. 540.
[11] Loewy: Münchener Medizinische Wochenschrift, 1910, No. 46, p. 2408.
[12] Wertheimer-Raffalovich: Deutsche Medizinische Wochenschrift, 1910, No. 37, p. 1710.
[13] Rodolico: Giornale Internazionale delle Scienze Mediche, 1910, Ann. xxxii.
[14] Brustlein: Zentralblatt für Chirurgie, 1911, No. 10.
[15] Von Brunn: Ibid., No. 3.

morphine-scopolamine combination is used. The drugs are used also by some as a post-operative sedative. In the hands of these men omnopon-scopolamine has supplanted morphine-scopolamine, with admittedly definite advantage to both surgeon and patient. Mr. C. L. Leipoldt, of the German Hospital at Dalston, has drawn attention to its use in this manner in an article published in THE LANCET.[16] His article is, I think, the first on the subject in the English language.

With increase of experience in its use, one is led to speak of it more and more enthusiastically. I do not intend to say much of it with regard to its use along with ether, but rather to give my experiences and opinion of it when used in combination with the injection of the field of operation with a local anæsthetic. I may say, however, that the amount of inhalation anæsthetic necessary is usually only one-sixth or one-fourth of what is necessary in ordinary circumstances. Strangely enough, in two of my cases, for no apparent reason, the amount of ether used to produce and maintain complete narcosis was considerably in excess of that ordinarily required. In both these cases omnopon alone was used. The sedative effects of the drug are apparent usually for hours after the operation is over and bad after-effects are negligible.

I have to thank Dr. William Anderson, my private assistant, for bringing omnopon under my notice, when he returned from Germany in the beginning of this year. He had seen it used in the clinic of Professor Perthes, in Tübingen, where it is administered along with injection of a local anæsthetic (novocaine). I procured samples of the drug at once in order to test it and took an early opportunity of visiting my friend Perthes in Tübingen, in order to see his work. Professor von Brunn, first assistant in the surgical clinic there, gave me many particulars as to their experience with it. My own experience extends now to its use in over 300 cases since March, and I feel that I can therefore speak with a good deal of knowledge of its effects. In order to have as accurate data as possible Dr. Anderson and I compiled a table of observations which were carefully kept in 70 cases. I thank many of our local medical men, especially Dr. J. Robertson (assistant anæsthetist at the Aberdeen Royal Infirmary), Dr. W. G. Thomson (my house surgeon), and Dr. Anderson for supervising these observations. I shall give details of my methods of procedure and the deductions made from the observations referred to above.

Dose.—I have used almost invariably, for adult males and females alike, intramuscular injections of solution containing 2/3 grain (0·04 grm.) of omnopon with 1/150 grain (0·0004 grm.) of scopolamine. The use of the scopolamine with either morphia or pantopon is justified by Bürgi's[17] observation that when two narcotics are injected simultaneously, or one shortly after the other, the effect is more potent than when a quantity of one, equal in strength to the combination, is injected alone. This holds good apparently only when the narcotics used are chemically related to different substances in the organism, or, in other words, when they have different cell receptors. In this way, simultaneously, different reactions are obtained. I used at first omnopon (0·04 grm.) alone in my hospital cases, while in my private cases I used scopolamine also. The private cases were uniformly more strikingly successful than the hospital ones, so that now all of them receive the mixture. Sickness was much more frequent when omnopon alone was given and in some cases it was particularly distressing. It was rarely observed when the mixture was used—so that I feel fairly certain that the scopolamine with omnopon acts as a preventive of sickness, more certainly than it does when used along with morphine. There is, in my opinion, no safety in attempting to regulate the dose in adults in proportion to the body-weight, age, or development of the patient. The dose used by me acted lightly in one patient, whereas in another of approximately the same weight and apparently in the same state of health and mental condition it acted most satisfactorily. The dose mentioned appears to me to be a safe one for any adult case. I do not think it is safe to give a larger one right off because of possible idiosyncrasy. Far rather have resort to a small quantity of inhalation anæsthetic if necessary, to produce surgical anæsthesia, or give a repeat dose of, say, half or quarter of the original dose 15 to 30 minutes before the beginning of the operation if the patient is not satisfactorily narcotised. The latter procedure has been resorted to in many cases with excellent result. One must remember another of Bürgi's observations in this connexion: that the same amount of such medicament given in two or more doses, one shortly after the other, acts more strongly than when the whole is given in one dose. In weakly or toxæmic individuals it may be well to give a rather smaller dose.

I have not used the combination in children below the age of 13, but with juveniles just above this age the effect has been quite satisfactory. A small amount of ether has usually been given in order to ensure quietness because such young patients are apt to show less control if they *should* be aroused by painful sensations. For such cases usually half the adult dose has been given. From my observations in such young patients I am inclined to agree with Leipoldt that it will have a very beneficial effect "in mitigating the effects of a prolonged operation in a child, as regards shock—and these advantages outweigh the possible, but more or less theoretical, dangers. Wiki[18] has recently shown that children bear morphia injections remarkably well, especially in cases of profound collapse from pain, and it is just in this class of case that it seems advisable to use omnopon on account of its sedative effect." It seems more advisable to make the injections into the muscles than "hypodermically," both on account of greater rapidity of absorption and less likelihood of local irritation. Von Brunn recommends limiting the circulation by applying tourniquets to two or more limbs near the trunk. He claims to produce "sleep" more quickly and to get more certain effects and at the same time to have, in case of too severe effects, a supply of "unpoisoned" blood which, when the tourniquets are removed, will nullify the excessive dose. He warns against the use of chloroform. Brustlein does not approve of this method. He has had three rather alarming experiences during its use. I have not used von Brunn's method.

Local anæsthetic used.—The patient's skin is prepared in the usual way before the injection of omnopon-scopolamine is made. While being brought to the operating table the face is covered with a towel. In order to prevent the patient seeing what is being done either a towel is kept on the face or a screen is fixed on the table to hide the field of operation. The skin is then finally wiped, first with mercuric biniodide in spirit (1–500), and then with Harrington's solution. I infiltrate the skin where the incision is to be made and the deeper parts of its neighbourhood, and, at the same time, in certain cases try to "block" the sensory nerves supplying the area of operation with solution of novocain and adrenalin. The adrenalin is used because the omnopon seems to cause increased vascularity in the superficial tissues. The adrenalin may, of course, help the omnopon in its effect on the cardio-vascular system. The strength of the novocain is ¼–½ per cent. in saline solution. According to the vascularity of the part concerned, ½–1 drachm of adrenalin chloride (1–1000) solution is added to each 100 c.c.

Messrs. Down Bros., Limited, have made for me an all-metal syringe, fitted for any size of Schimmel's needles and with special detachable points (which facilitates filling), and capable of holding 40 c.c. I use No. 15 (small) and No. 0 (large) Schimmel's needles. The ordinary syringes are too small for handy use when large areas have to be anæsthetised. It is, of course, perfectly easy to anæsthetise the immediate area of incision or dissection, but when intra-abdominal manipulations have to be carried out the anæsthetising of the parietal peritoneal tissue is a matter of considerable difficulty if the omnopon has not taken good effect. In several such cases I have, by using gauze-packs wrung out of novocain solution, been able to finish operations satisfactorily with but little complaint from the patient. As one gets more practice in the injection of the local anæsthetic, the results with regard to the anæsthetising of the parietal tissues are increasingly satisfactory.

In operations on the perineum or lower extremities, and in intravesical operations, such as enucleation of the prostate, I find much help in many cases from the injection, extradural, into the sacral canal of ¼ per cent. novocain solution, 20–40 c.c., according to the size of the patient. (Stoeckel's method.[19, 20]) This "blocks" the sacral nerves

[16] THE LANCET, Feb. 11th, 1911.
[17] Bürgi: Deutsche Medizinische Wochenschrift, 1910, No. 2, p. 62.
[18] L'Opium chez les Enfants, Revue Medicale de la Suisse Romande, vol. xxx., 1910.
[19] Stoeckel: Zentralblatt für Gynäkologie, 1910, vol. xxxiii., pp. 1-15.
[20] Mayer: Epitome, Brit. Med. Jour., August 13th, 1910.

before they emerge from the sacral canal. I had previous to my using omnopon-scopolamine a large experience in the use of local anæsthetics, and I feel that the simultaneous use of omnopon-scopolamine enhances the success of such anæsthetics by nearly 50 per cent.

In the operations in my wards of the Aberdeen Royal Infirmary during the past few weeks an inhalation anæsthetic is used in but 20 per cent. of cases. Emergency cases are excluded from the calculation because they are operated on usually immediately after admission to hospital.

Effects before operation.—Patients are prepared as for inhalation anæsthesia. The injection of omnopon-scopolamine is made deeply into the muscles (usually of the buttock) and patients very seldom make any complaint of local irritation. In my cases I have found it best to have the injection made 1¼–1½ hours before operation. The patients begin to get drowsy usually in a very few minutes and should be encouraged to go to sleep by being left alone in a darkened room free from noise or disturbance of any sort. Certain patients should not be told beforehand that possibly they will not get any inhalation anæsthetic; there should be no special fuss made about the method, otherwise they are apt to become excited, apprehensive, and resistant to the action of the drugs, and are almost certain to require some inhalation anæsthetic in order to quieten them during the actual operation. Such patients allow usually the injection of the local anæsthetic to be made, but when they appreciate that the operation is in progress they begin to complain. That such complaints are merely "mental" is fairly well shown by such facts, for example, as that only three drachms of ether (open method) were necessary to keep an excitable girl quiet during the operation for bilateral inguinal herniæ, or that in a complete operation for cancer of the breast, lasting one and a half hours, only 1½ oz. of ether were used.

In people over 50 the drugs act especially well. The older the patient the better the effect. This fact, in my opinion, makes this method of anæsthesia so valuable. It acts best in just that class of case in which one is anxious about the effects of an inhalation anæsthetic. Such patients usually go to sleep during the hour before the operation, or at any rate rest quietly, and are quite free from that apprehension which in some cases is so distressing. This advantage is, of course, evident when other narcotics are used, but with these there is sometimes considerable excitement during the early stages. Only in cases where omnopon was used alone has there been any sickness during this preliminary period. The pulse and respiration, which may previously have been raised in rate owing to excitement, become slower and of quite natural volume or depth. In only one case (gastrectomy in a woman of 56), where a double dose had been given by mistake, was there any anxiety caused by interference with respiration. The pulse kept good (about 90) all the time, but at the beginning of the operation the respirations were only 3 per minute, although they were quite deep when they occurred. The patient could not be roused to speak. The colour kept perfectly natural all the time. No novocaine was used in this case. The respirations were practically normal at the end of the operation, although they became slower again (8–10 per minute) for an hour after the operation. I may say here that clinically I have verified the experimental findings on the respiration and circulation previously referred to. It has always impressed me that a deep narcosis from omnopon gives rise to infinitely less anxiety than a similar narcosis from morphia. While in several cases the breathing has become slowed to 8 or 10 per minute, yet the general condition, colour, and pulse kept so good that one felt quite easy in mind. In no case has cyanosis been noted.

Some patients remark when roused on a feeling of thirst, even at this stage. Even in a perfectly satisfactory case the patient can practically always be roused to speak, to raise their limbs, pelvis, or abdomen, to take deep breaths, and so on, when they are placed on the operating table. They frequently take notice of the process of disinfection of the skin and more frequently of the early stages of anæsthetising the wound area, but have usually settled down again by the time that operation sheets, towels, &c., are fixed in position.

Effects during operation.—For obvious reasons the patient's arms, unless to be operated on, are fixed alongside the trunk by wrist-straps attached to a belt which runs round the table. Another belt, round the table and lower thighs, prevents the patient from flexing the knees. Usually no objection is made to being fixed up in this way. During a severe operation in a satisfactory case the general condition of the patient leaves little to be desired. This is especially remarkable in old patients in such serious operation as gastrectomy, colectomy, or gall-stone cases, where the operator and anæsthetist have frequently, under ordinary conditions, so much anxiety. This is just the sort of case in which one wishes to avoid inhalation anæsthetic. There is no necessity for haste on account of the effects of the anæsthetic. There is practically never any shock. (I have seen shock in only one case, a very difficult abdomino-perineal excision of the rectum, in which ether had to be given freely—10 ounces.) Respiration remains unaffected unless when organs are pulled upon vigorously or when exploration of the abdominal cavity is made, when the extreme sensitiveness of the parietal subperitoneal tissue appears. The pulse is unaffected unless under similar circumstances, when merely occasional increased frequency is the only result. In some cases the blood pressure has fallen to the extent of 10–15 mm. Hg, estimated by Martin's modification of the Riva Rocci manometer. In one case of subtotal gastrectomy, entailing removal as well of 15 inches of the transverse colon, part of the mesocolon, and stripping of the parietal peritoneal tissues off the pancreas, &c., separation of numerous old inflammatory adhesions, and so on, which occupied about three and a half hours, there was no evidence of shock, the pulse at the end of the operation being 90, regular, and of good volume.

The patients are usually able to assist the operator in more ways than one. For example, as already indicated, the taking of deep breaths may help the delivery of stomach, gall-bladder, or pelvic tumour from the wound. In some cases, during the performance of a laparotomy for other conditions, the patient has acquiesced in the decision with regard to the removal of the appendix, and so on. The fact that they can hear what is going on is urged at the time by some patients very persistently as a reason why they should get ether or chloroform. Such patients are usually easily quietened by receiving a few drachms of ether, and they then frequently remain quiet till the end of even a long operation, although they may become conscious again and even talk. In two cases intermittent complaints of a feeling of intense restlessness were made, which were overcome only after much encouragement by conversation. The loosening and holding of a hand by an attendant also seemed to relieve these attacks. One case was that of the combined gastrectomy, colectomy, &c., above referred to, in which the restlessness occurred during the last half-hour of the operation, and the other was a case of difficult thyroidectomy lasting 45 minutes. On both occasions the day was extremely warm and close, and the atmosphere in the theatre was irksome to all in it. Neither of the patients remember about the restlessness, and it is a curious fact that although a patient may talk perfectly rationally about many subjects, they frequently have no recollection of doing so, or, indeed, of the operation. This want of memory might create difficulties legally in a possible claim for damages on account of the permitted removal of a diseased organ not previously diagnosed. Sweating has been noted only occasionally. Thirst has been frequent and I have never hesitated to give a small quantity of water to drink, or, in gastric cases, merely to wash out the mouth. In patients who afterwards have no recollection of pain, or, indeed, of the operation, there has sometimes been a good deal of moaning or muttering during traction of organs or section of nerves—e.g., in breast operations—but there has rarely been noticed any deterioration of the pulse as in inhalation anæsthesia when such moaning is provoked. The pupils are generally slightly contracted, but in practically all cases have reacted, usually sluggishly, to light. The conjunctival and corneal reflexes have never been found to be abolished. In fully narcotised patients muscular relaxation has been more satisfactory than when ether is used alone. In only one case where ether was not used have I had any difficulty in replacing bowel in the abdomen. I think that this was due chiefly to inefficient preparation, among other things in the matter of diet, of the patient previous to operation.

I have been disappointed in two cases with the inefficient

action of the omnopon-scopolamine. In both of these cases the patients were strongly-built healthy men, but in spite of that, from my experience, I expected that the narcotic would have a good effect. The local anæsthetic had also very little effect. They were both "tipplers." The occurrence of failure is perhaps fortunate in that if the method were successful in every case critics might well say that the effect was too perfect, that the writer's enthusiasm for a new procedure had carried him too far.

Effects after operation.—The patients seem occasionally to feel the application of a firm binder or bandage as much as any part of the operation. This has the effect of reassuring onlookers who may be timid concerning the method of anæsthesia. The average case is conscious enough to appreciate that the operation is finished, and in many cases to express thanks, which sentiment, in these Socialistic days, is increasingly rarely given voice to by hospital patients when they are in full possession of their faculties! Only on very few occasions have patients been in a condition to be allowed to walk back to bed. They stagger and feel giddy as if intoxicated by alcohol.

Practically all cases, except those of moveable kidney, loin abscess, spinal or thigh lesions, are placed at once in the reclining position. The patients usually go to sleep at once, after being settled in bed, and sleep for a considerable period, even so long as six hours. In those who do not sleep, pain is not complained of for several hours. This is of considerable advantage in cases of operation on the upper abdomen, in which, when inhalation anæsthetics alone have been used, the pain of the wound, after consciousness has been regained, prevents the patients properly inflating the lungs. In cases with heart or lungs below par this early respiratory difficulty may lay the foundation of more serious trouble which becomes pronounced in the course of a day or two, such as hypostatic congestion, pneumonia, or massive lobar collapse. The fact that occasionally respiration is slowed during the first hour or two after omnopon-scopolamine anæsthesia is possibly a drawback in this connexion, and for this reason such patients as require it are roused up every half-hour or so and made to take a few deep breaths so as to fill out the lungs thoroughly. There have been strikingly fewer cases of chest trouble in the omnopon series than in a similar number of cases in which inhalation anæsthesia was used alone.

There is apparently no reason why a second dose of omnopon-scopolamine should not be given, if necessary, to subdue post-operative pain. By giving half the original dose —i.e., 1/3 grain (0·02 grm.) omnopon and 1/300 grain (0·0002 grm.) scopolamine—we can secure for the patient a restful, painless night, and the impression is given that the immediate and after effects are preferable to those of morphia, in that the rest is more natural and the heavy nauseated feeling which morphia often gives next morning is absent. In some cases in which morphia has had but little effect, omnopon has acted promptly and efficiently.

Gastro-intestinal system.—I have already referred to the occasional presence of distressing sickness and vomiting after omnopon has been used alone. It has never persisted more than from 24 to 36 hours. When scopolamine was given along with the omnopon, sickness has been present either before, during, or after the operation in only four cases, less than 2 per cent. In three of these cases it was found that morphia produced the same result, in probably worse degree. In one case relief was procured after 2 drachms of a solution (1-100) of potassium permanganate had been given by the mouth. The patient vomited at least part of this about 15 minutes later, but was not again sick.

Thirst is the most distressing post-operative symptom and is most marked in patients who have been well under the influence of the omnopon-scopolamine, owing probably to their having slept with the mouth open. It is doubtful if this thirst is any greater than what occurs after inhalation anæsthesia. Plain water is given in small quantities to relieve thirst, except in gastric cases. In no case has thirst been complained of after 24 hours. The giving or withholding of scopolamine did not seem to have any effect on this symptom.

The appetite remains unimpared in most cases which are not complicated with sickness. Several patients have asked for and received solid food immediately after operation, while, on the other hand, in a very few cases the appetite has been rather poor for the first day.

There has been no evidence of unfavourable action of the drug upon intestinal peristalsis. Flatus has been passed within 24 hours even in cases of operation upon the colon, such as ileocolostomy or colectomy. This fact is of great benefit to patients, as except on very rare occasions there is no tympanites with its accompanying colicky pains. Movement of the bowels has been secured on the second or third day with the usual aperients more easily than in cases where ether alone was used. In this respect, also, omnopon compares very favourably with morphia, as when the latter is used, either before or after operation, a subsequent paralytic condition of the bowel is a frequent, persistent, and distressing result.

Circulatory system.—Pulse. At the end of operation the pulse is usually slightly accelerated, but as soon as the patient is settled in bed the rate and rhythm return to the normal. After six to eight hours there is usually a rise of from 10 to 20 beats per minute, but gradually a return to normal rate occurs within 24–36 hours. This temporary rise is most marked in nervous patients or in those who have been subjected to severe operations. As has been stated, the blood pressure shows during or at the end of operation a fall of from 5 to 15 mm. Hg, but by the end of the first day it has risen again to normal. In no case has any dilatation of the heart been observed, and as far as can be made out by the usual methods of percussion and auscultation the cardiac muscle remains uninjured by the drugs even in cases with evidence of old endocarditis. In one such case operation (gastro-enterostomy) had been decided against by two different surgeons in different parts of the country.

Respiratory system.—In well-narcotised patients the respiration is slow but regular and deep during the first few hours. No stertor has been observed. As soon as the patient is fully awake, however, there is a rapid rise in rate to the normal, which is maintained although the patient may again fall asleep. The colour of the face remains good. As the effect of the omnopon passes off the face becomes paler. Chest complications have been exceptionally few in number. Acute lobar pneumonia occurred in one patient, aged 65, who was suffering from well-marked secondary anæmia due to hæmorrhage from duodenal ulcer. (Hæmoglobin before operation was 52 per cent., red blood corpuscles 2,300,000.) The patient became rapidly very ill and died on the fourth day after operation, and although massive collapse of the lung was suggested the consultant physician was of opinion that such did not exist. Post-mortem examination was not performed.

Omnopon-scopolamine is especially valuable in phthisical cases, as it obviously does away with the disadvantages of inhalation anæsthesia.

Urinary system.—In severe abdominal operations the quantity of urine during the first 24 hours shows a marked reduction, while in other cases the reduction is less. In many practically no reduction in amount is noticed. In one case of subtotal gastrectomy with colectomy only 10 oz. of urine were passed during the first day, a reduction of 25 oz., but in cases where the operation *per se* does not interfere with metabolism the reduction amounts to from 10 to 15 oz., so that again there is little difference from inhalation anæsthesia. During the second day there is an increased excretion in most cases, and the amount passed before operation is equalled during the third day. In no instance has albuminuria or glycosuria appeared during convalescence. The specific gravity is usually raised on an average from about 1020 before to about 1028 after operation, the rise being usually in inverse proportion to the quantity passed. The quantity of urea passed daily has been estimated in a few cases before operation and during the first three days thereafter. The number of cases estimated, however, has been too small to draw definite conclusions, but aided by the rough method of estimation of the urea from the specific gravity, we may infer that the effect of omnopon-scopolamine on healthy kidneys is of little importance from a practical point of view. The effect of this narcotic on the function of the kidney seems to compare favourably with that of an inhalation anæsthetic. In old people, especially where the quantity on the day following operation has been much decreased, a few doses of such a simple diuretic as spirit of nitrous ether have speedily had a beneficent effect.

Nervous system.—The mental acumen of the patient

remains dulled in some cases for a short time (8–10 hours) after operation, but thereafter this condition rapidly passes completely away. There has been no headache, restlessness, or giddiness complained of even by nervous patients during convalescence. All superficial reflexes are sluggish but normal again by the day after operation. Muscular paralysis, hyperæsthesia, or anæsthesia of any description has never been noted. Two cases have been transferred to the lunatic asylum, but as there had been mental derangement in both cases some time previous to operation it is unfair to ascribe any causative influence to the omnopon, especially as it is found to be of such value in psychiatric cases (Haymann). One case, gastro-enterostomy for pyloric stenosis, had twice previously been in the asylum, and had two brothers who had also been confined there. The other case was one of trephining for depressed fracture which had been caused eight years before operation. The continuous headache and worry were so annoying to the patient that he had stated before operation several times that "he did not feel quite sure of himself in that he might do himself harm." He improved vastly, was much brighter in every way, had no headaches, and was dismissed three weeks after operation. On the day after dismissal from hospital he was found wandering in the street, had apparently "suicidal mania," and was taken to the asylum.

The healing of the operation wounds is not delayed in the slightest degree by the use of the local anæsthetic.

There has been one case of shock—an abdomino-perineal excision of the rectum above referred to. There has been one post-operative collapse from internal hæmorrhage due to slipping of a ligature on the ovarian vessels. It has been suggested that the omnopon might obscure symptoms of internal hæmorrhage, but as a good colour and pulse are characteristic of omnopon-scopolamine narcotisation it is unlikely that any real difficulty will ever occur. The restlessness of severe hæmorrhage is, however, likely to be absent.

Deaths Occurring after Operation in which Omnopon or Omnopon-scopolamine has been Used Alone or in Conjunction with Other Anæsthetics.

There were but seven deaths in the series of 300 cases.

1. Male, aged 65. Duodenal ulcer, with secondary anæmia (Hb. 52 per cent., R.B.C. 2,300,000). Death on fourth day from acute lobar pneumonia of 18 hours' duration.
2. Female, aged 54. Extensive carcinoma of stomach. Gastrectomy. Death on fifth day from pulmonary embolism.
3. Male, aged 67. Comminuted fracture of upper end of femur. Plated. Death 17 hours later from fat embolism. Ether used.
4. Male, aged 65. Hypertrophy of prostate with septic urine. Prostatectomy in two stages. Death on eighth day after second operation from double suppurative pyelonephritis.
5. Male, aged 62. Acute intestinal obstruction from band, three days' duration. Death four hours later (½ dose omnopon only, plus ether).
6. Female, aged 59. Carcinoma recti. Abdomino-perineal excision. Death from shock six hours after operation. Ether used.
7. Negro male, aged 40. Double renal and perirenal abscesses. Death three weeks after operation from marasmus. (The patient refused food, having, as he said, made up his mind to die.)

It will thus be seen that in no case could the cause of death be ascribed justifiably to the effects of the omnopon-scopolamine.

Treatment of Cases in which Excessive Action of the Drug Occurs.

The usual stimulating remedies may be used, but probably most good will be got from the intravenous infusion of saline solution in which one or two grains of potassium or sodium permanganate are dissolved. Atropine has apparently little effect. The possible benefit obtained in cases of persistent sickness from the administration of potassium permanganate by the mouth has already been referred to.

It will be noted that none of the cases in the following table are trivial ones, which would ordinarily require such a small amount of ether, especially when given on a mask by the open method. Many of the remaining cases, not included in the foregoing lists, were difficult pelvic cases, operations on joints or bones, &c., or occurred at the beginning of the series when the administration of the omnopon-scopolamine or local anæsthetic was not so efficient. It is readily appreciated that this method of narcotisation alleviates, in a very great measure, the anxieties of anæsthetists.

Synopsis of Cases requiring no Ether.

Appendicectomy (both acute and interval cases)	22
Appendicostomy	1
Cartilage (excision of semilunar of knee)	2
Cholecystectomy or cholecystostomy (2 with choledochotomy)	5
Colectomy	3
Cystotomy (suprapubic)	7
Exploratory laparotomy (inoperable cancer)	3
Fractures (plating and nailing)	8
Gastrectomy (subtotal, 2 with colectomy)	6
Gastro-enterostomy (1 with gastroplasty for hour-glass stomach)	14
Hæmorrhoids (Whitehead's operation)	6
Hallux valgus	1
Hernia	12
Hysterectomy (supravaginal for large myoma)	2
Hysteropexy	3
Ileosigmoidostomy	4
Intestinal obstruction (one with resection of bowel)	2
Ligamentum patellæ, suture of	1
Mammary tumours (four complete operations for cancer)	8
Nephropexy (one double)	5
Nephrotomy (double)	1
Ovarian tumours	3
Penis, complete removal of	1
Perineal operations	8
Prostatectomy	4
Recurrent growth (carc. mammæ) in axilla	1
Sarcoma of leg (extensive removal)	1
Skin-grafting (extensive)	6
Thyroidectomy	2
Trephining	1
Varicose veins (four double)	6
Total	149

Cases requiring under 3 Fluid Ounces of Ether (Open Method).

Appendicectomy (acute and chronic)	13
Cartilage (excision of internal semilunar of knee)	1
Cholecystectomy or cholecystostomy	3
Excision of joints (knee-tarsus)	2
Fracture (plating)	2
Gastro-enterostomy	2
Hernia (double)	1
Hysteropexy	3
Intestinal obstruction (one with resection of bowel)	3
Mammary tumour	1
Nephropexy	1
Ovarian tumours	4
Perineorrhaphy	1
Sarcoma of neck (excision)	2
Varicose veins	3
Total	42

Conclusions.

1. That omnopon-scopolamine used in the dose and manner recommended is apparently a perfectly safe narcotic.
2. That it increases enormously the field of application of local anæsthetics.
3. That it is especially advantageous when used in conjunction with local anæsthetics in extensive operations in old patients.
4. That the innate objection of many patients to being conscious during the performance of extensive operations does not constitute, according to experience, a justifiable contra-indication to the method.
5. That there are no bad sequelæ which can be reasonably ascribed to the use of the drugs in the method described, even in cases where lesions of heart or lungs have been a serious objection to the use of an inhalation anæsthetic. The writer has not had sufficient experience of operations in renal lesions to enable him to draw satisfactory conclusions.
6. That with increasing experience in the dosage of the omnopon-scopolamine combination, the results, especially in younger adults, are increasingly satisfactory.

Since writing the above I have had increasingly satisfactory experience with over 150 more cases. The improved results have been due mainly to improvement in dosage for middle-aged patients. A repeat half dose has frequently been necessary, and some have got even a further quarter or half dose at the commencement of the operation. In some old patients half or three-quarters of the ordinary dose has

been ample—in fact, in one or two the effect has lasted for 12 to 16 hours. This is apt to happen apparently in enfeebled, wasted, "wizened" patients, especially if they give a previous history of "knuckling under" to minor maladies. I should, therefore, like to give a note of warning that the narcotisation is not in all cases the extraordinarily simple matter which onlookers are apt to suppose. Experience only will enable us to estimate when such doses are really required, and therefore in beginning the use of the drug we should far rather incur imperfect results and have resort to ether than run unnecessary risk with omnopon alone. We must constantly keep in mind that the full effect of the drug is produced slowly and that repeat doses within a short period have a more potent effect than might be supposed. It is almost impossible to convey on paper the indications for repeat doses, or rather for the withholding of repeat doses. Some patients look drowsy or may be sound asleep when this judgment has to be given, yet wake up directly the operation is begun. The rate of respiration, the general condition and the temperament of the patients, the apparent lethargy produced, and other minor conditions have all to be taken into consideration. It is well, therefore, in order to have good results, for the operator to decide previously what the initial dose is to be and to have some reliable person on the spot to decide half an hour before operation whether a second dose is necessary.

In satisfactory cases, the condition of the patient before, during, and after operation is so ideal that I think it well worth while to take trouble to master the details which will procure equal results in all cases.

Aberdeen.

BREAST-FEEDING: THE VALUE OF THE TEST-FEED.[1]

BY ERIC C. PRITCHARD, M.A., M.D. OXON., M.R.C.P. LOND.,
SENIOR ASSISTANT PHYSICIAN, QUEEN'S HOSPITAL FOR CHILDREN, HACKNEY-ROAD, N.E.; PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST; AND HONORARY PHYSICIAN FOR INFANT CONSULTATIONS, ST. MARYLEBONE GENERAL DISPENSARY;

HUGH RONALD CARTER, M.D. BRUX., M.R.C.S. ENG., L.R.C.P. LOND.,
HONORARY PHYSICIAN FOR INFANT CONSULTATIONS, NORTH KENSINGTON;
AND
W. O. PITT, M.D. CANTAB.,
ASSISTANT MEDICAL OFFICER, THE PARK HOSPITAL FOR CHILDREN, HITHER GREEN; LATE VISITING MEDICAL OFFICER, ST. MARYLEBONE WORKHOUSE.

By a "test-feed" we mean an estimation of the amount of breast-milk obtained by the nursling at a single feeding. The estimation is made by weighing the infant before and after feeding on scales sufficiently accurate to record differences of one drachm avoirdupois. This test has been applied to most of the breast-fed babies who have attended the infant consultations at the St. Marylebone General Dispensary during a period of 6½ years, to infants who have attended the Kensington Infant Consultations during a period of 4½ years, to a certain number of sick infants who have attended at the Queen's Hospital for Children during the last 2½ years, and to a considerable number of infants born in the lying-in wards of the Marylebone Workhouse during the last 2 years. We have thus, in the aggregate, a large number of estimations of the amount of breast-milk obtained by nurslings during the whole of the first year. These estimations, in the cases of the Marylebone General Dispensary and the Kensington Infant Consultations have been taken under our personal supervision, while the Marylebone Workhouse and Queen's Hospital cases were weighed by trained and experienced nurses.

It is unfortunate that we have been unable to find analogous observations made in this country with which to compare our figures. To prove how little the method is understood in this country we may mention that when we embarked on these researches, in spite of the most careful inquiry, we could find no scales which could be used for this purpose, and we were compelled to order special weighing machines to carry out the work. It is needless to say that spring-scales, or ordinary baby scales, are quite useless for the purpose of accurate weighings. Heretofore, all our knowledge with respect to the amount of breast-milk consumed by the nursling has been derived from observations made in France, Germany, and Austria, where racial and social conditions are somewhat different from our own.

Our results are so widely different from those obtained by Heubner, Feer,[2] Camerer,[3] Peter,[4] Beuthner,[5] Hachner,[6] and others on the Continent that we might have hesitated to publish our several results had they not shown such singular agreement in the more important details. Comparing these foreign results with ours, it would appear that nursing mothers who live under good hygienic conditions in maternity institutions such as those in which these continental observations were made, supply much larger amounts of milk than do the class of women in this country who live at home and attend our out-patient clinics.

Our observations, which for the most part have been made at varying times of the day at our respective clinics, possibly are not so accurate as many of those made abroad in which the amount of every feed was definitely measured. In our investigations we have, in each case, ensured the lapse of an interval of from two and a half to three hours between the time the infant was last put to the breast and the time of the "test-feed." We have estimated the total supply in the 24 hours by multiplying the amount of milk obtained at one "test-feed" by the total number of feeds taken in the 24 hours. Thiemich[7] asserts that this does not give an accurate estimation of the amount in the 24 hours. It is somewhat difficult to prove or disprove the truth of this statement in the case of out-patients, for it is practically impossible to estimate all the domiciliary feedings. Although the test feeds were made in Marylebone sometimes at 10.30 A.M. and sometimes at 3 P.M., in Kensington at 3 P.M., and at the Queen's Hospital at 9 30 A.M., our several estimates for the total amount for the 24 hours agree so closely that it is difficult to believe there is any substantial inaccuracy in our method. In private cases we have noted one feed differs but little from another when the feedings are by the clock, and not at irregular intervals. We here append the results of a few private cases in which every feeding was carefully estimated.

TABLE I.—*Cases in Private Practice. Test Feeds Conducted for each Meal during 2½ Hours for Three Days in 5 Cases. Average for Three Days in Each Case.*

Age and weight of infant.	Time of feeding.								
	5 A.M.	7 A.M.	9 A.M.	11 A.M.	1 P.M.	3 P.M.	6.45 P.M.	8.45 P.M.	10.45 P.M.
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Case 1.—17 days, 9 lb. 7 oz. ...	5	3	3¼	3¼	3	3¼	3¼	3	3
,, 2.—1 month, 9 lb.	4	2	2½	2	2	2	2½	3	2
,, 3.—2 months, 10 lb. ...	3½	2	2½	2	2½	2	2½	2½	2
,, 4.—4 months, 10 lb. 6 oz.	5	—	3	—	2½	—	3½	—	3
,, 5.—2 months, 11 lb. ...	5	3	3¼	2	2½	3	3½	2½	3

It will be noted that the variations in the amount of milk consumed are comparatively slight, except in the case of the early morning feed; this feeding, owing to the prolonged rest over-night, is invariably the largest in the 24 hours. On the other hand, some of the figures which we have collected from the literature appear to bear out Thiemich's statement. For instance, certain of Feer's cases show considerable variations, and, again, variations to a lesser degree are to be noted in Peter's cases. We do not know, however, in these instances whether the intervals were strictly regulated by the clock. We ourselves have always attached the greatest importance to regularity in the times of feedings, and have spared no trouble to secure complete regularity in the meal-times of the infants who have attended our consultations.

Most of our estimations have been made between the third week and the sixth month. During the first two weeks of

[1] A paper read before the Society of Infant Consultations on July 13th, 1911.

[2] Jahrbuch für Kinderheilkunde, Band xlii., 1896.
[3] Zeitschrift für Biologie, Band xiv., 1878.
[4] Archiv für Kinderheilkunde, Band xxx., xxxiv., 1902.
[5] Ibid., Band lvi., 1902.
[6] Jahrbuch für Kinderheilkunde, 1880–1881.
[7] Lehrbuch für Kinderheilkunde, E. Feer, p. 40, 1911.

life infants are seldom brought to our consultations, and after the sixth month we frequently employ supplementary feedings, which naturally deprive the single test-feed of statistical value.

To add to the completeness of our figures the early hiatus between the first and twenty-first day of life has been filled in by a very carefully conducted series of "test-feeds" which have been carried out in the maternity wards of the Marylebone Workhouse. These figures can, in a sense, be compared to those of foreign observers, as they refer exclusively to nursing mothers who have been kept under observation in an institution where the dietetic and hygienic conditions were carefully regulated. Our figures for this group are based on 61 cases, and the total number of test-feeds taken was 9435. For the sake of comparison we inscribe in parallel columns similar averages worked out by Feer and Camerer; as their figures are based on six cases only they have not the same statistical value as our own.

TABLE II.—*Average Amount of Milk Consumed by Nurslings during the First Ten Days of Life in 24 Hours.*

Day of life.	1st.	2nd	3rd.	4th.	5th.	6th.	7th.	8th.	9th.	10th.
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Our cases (61)	½	4⅛	4⅛	6½	6	7¼	8	7	8	8½
Feer's cases (6)	0	½	5½	11½	15	16½	20	18½	21	20
Camerer's cases (6) ...	¾	2½	6	11½	12½	13	16	16½	16	15¾

We are unable to explain why our figures, taken as a whole, are so much lower than those given by Feer or Camerer; nor can we explain the anomaly that on the second day of life our cases obtained more milk than did those in the parallel series.

In Table III. we give more detailed figures of the amount

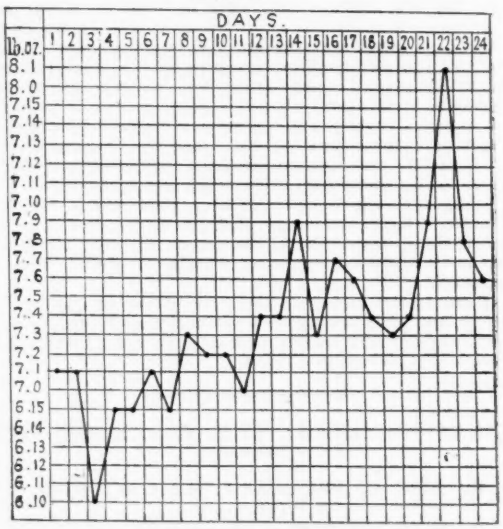
TABLE III.

Day.	Total quantity of food taken each day.	Average number of feeds each day.	Average quantity of each feed.	Daily weight.
	oz. drs.		drs.	lb. oz.
1st	0 9	3·23	2·28	7 1
2nd	4 15	5·00	5·23	7 1
3rd	4 12	8·88	8·19	6 10
4th	6 4	9·24	9·98	6 15
5th	6 11	9·33	11·70	6 15
6th	7 3	9·22	12·39	7 1
7th	7 9	9·53	12·43	6 15
8th	7 13	9·44	13·29	7 3
9th	8 1	9·43	13·80	7 2
10th	8 4	9·11	13·93	7 2
11th	7 14	9·40	13·36	7 0
12th	8 8	9·38	14·88	7 4
13th	8 13	9·23	14·69	7 4
14th	8 11	9·48	14·70	7 9
15th	9 3	9·29	15·70	7 3
16th	9 8	9·52	15·96	7 7
17th	9 4	9·54	15·94	7 6
18th	9 10	9·58	16·08	7 4
19th	9 12	9·69	16·07	7 3
20th	10 4	9·00	18·43	7 4
21st	11 5	8·00	18·10	7 9
22nd	10 6	9·28	18·4	8 1
23rd	11 7	10·00	18·3	7 8
24th	12 2	10·00	19·4	7 6

of milk obtained on successive days by the infants in our series, of the number of feeds given in the 24 hours, and of the weight of the infants from day to day, from which the average daily gain or loss can be calculated.

It will be noticed that the gains or losses registered from day to day show somewhat marked deviations from the standard which is generally regarded as normal; nevertheless, the curves, taken as a whole, conform to the usual type—that is to say, at the end of the first week the infants have regained the initial loss, and present approximately the same weight as at birth, and during each of the following weeks they show a gain of about half a pound. In other words, the infants in our series, in spite of the fact that their average intake of food is well below the accepted standards, increase in weight at about the same rate as infants who are estimated by other observers to take a very much larger quantity of milk. This is shown by the accompanying curve:—

FIG. 1.—*Curve showing Variations in Weight during First 10 Days of Life. Average Weight of 61 Breast-fed Infants.*



The average test-feed from the tenth day onwards has been estimated in the cases of a large number of infants of varying ages who have attended at our clinics in Marylebone and Kensington. The mothers of these infants lived at home without any disciplinary control. For the most part, the infants sent to the Marylebone Consultations were either ill, mismanaged, or weaklings from hereditary or congenital causes, while of those sent to the Kensington Consultations the majority were mismanaged, a few were ill, but some were fine, healthy infants.

For the sake of comparison, we give the test-feeds of a number of babies who were brought to the Queen's Hospital for Children, either because they were wasting or because they presented other symptoms of disease.

TABLE IV.—*Showing the Average Amount of Milk Consumed at a Test-feed During the Various Ages up to Nine Months According to Different Observers.*

	Weeks.			Months.							
Age	2	3	4	2	3	4	5	6	7	8	9
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Marylebone figures	1·87	1·62	1·95	2·04	2·26	2·23	3·0	2·81	3·08	2·67	—
Kensington figures	—	1·75	1·85	1·8	2·0	2·15	2·5	2·67	2·72	2·9	3
Queen's Hospital figures	—	1·0	1·47	2·0	1·84	1·35	2·18	3·0	2·08	—	—
Peter's figures ...	2·4	2·7	2·87	5·42	—	—	—	—	—	—	—
Camerer's figures ...	2½	3½	3½	3½	4½	3½	—	—	—	—	—
Beuthner's figures	2	2¼	2¾	3¼	4½	4½	5	—	—	—	—
Feer's figures	2·5	2·8	3·5	4·0	4·5	4·8	4·8	—	—	—	—
Hachner's figures ...	2½	2½	3	5¼	5½	5¼	5½	5½	7	—	—

Unfortunately, we have been able to find only a few figures by foreign observers with which to compare our results, since most of their estimates are worked out for the 24 hours and not for the individual feeds. In the following table we give in parallel columns our figures for the 24 hours and also those published by Camerer, Feer, Beuthner, Peter, and Hachner:—

TABLE V.—*Showing the Average Amount of Milk Consumed in the 24 Hours.*

Age	Weeks.			Months.						
	2	3	4	2	3	4	5	6	7	8
	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.
Marylebone figures ...	18·8	14·77	13·46	16·38	16·02	15·85	13	18·25	20·66	12
Kensington figures	—	16·5	14·5	20	14·5	13·2	17·2	21·5	15·4	26·2
Queen's Hospital figures ...	8	—	9·71	18·15	14·3	11·66	9·16	16·25	12	12
Camerer's figures ...	19	20	28	28	28·25	30·5	33	33·5	—	—
Feer's figu ...	17·5	15	20	27·5	26·25	27	28	34	30·5	—
Beuthner's figures ...	13	18	19·5	27	28·5	28	—	—	—	—
Peter's figures ...	16	17	20	21	—	—	—	—	—	—
Hachner's figures ...	15	19	19	28	28	26	30	33	44	—

The following table shows the number of infants of different ages on which our figures and those of foreign observers were based. It will be noticed that the number of cases on which the foreign observations were based were very few as compared with our own.

TABLE VI.—*Showing the Number of Infants of Different Ages on which the Figures in Table V. are Based.*

Age	Weeks.			Months.						
	2	3	4	2	3	4	5	6	7	8
Marylebone cases	5	9	26	74	39	20	8	7	3	1
Kensington cases	—	2	10	20	15	13	8	5	8	8
Queen's Hospital cases	1	—	7	30	23	6	6	4	1	1
Peter's cases	9	10	7	5	—	—	—	—	—	—
Camerer's cases*	—	—	—	—	—	—	—	—	—	—
Hachner's cases	1	1	1	1	1	1	1	1	1	—
Beuthner's cases	2	2	2	2	2	2	—	—	—	—
Feer's cases	2	2	2	2	2	2	2	2	2	—

* Camerer's figures, according to Feer, were based on 97 cases, but we have not been able to ascertain the number for the various ages.

Table VII. on the following page shows in parallel columns the average weights and the average increase in weight per week of the infants referred to in the above tables.

With respect to the figures in Table VII. there will be found a most remarkable similarity in the Marylebone and Kensington cases; the figures from the Queen's Hospital, as would naturally be expected in the case of sick infants, are altogether on a lower plane. Camerer's figures are uniformly higher—that is to say, his infants, who are well cared for in institutions, and whose mothers are regularly and judiciously fed, show a larger weekly increment in weight, which is almost, if not entirely, parallel with the larger amount of breast milk consumed.

Our experience with the test-feed in Marylebone and Kensington has proved to us that no reliance can be placed on the quantity of milk consumed as a criterion of the progress or nutrition to be expected in the infant. Many babies make the most remarkable progress on exceedingly small quantities of milk, while others, whose daily allowances appear to be ample, show various symptoms of malnutrition. Our general impression for a long time has been that, on the whole, the infants who obtain the smaller amounts give less trouble and make better progress than those obtaining the larger quantities. We, therefore, decided to arrange our cases into three groups according to the amount of milk consumed daily and ascertain whether any inferences could be drawn from the evidence thus afforded:—Group 1: Those obtaining less than 10 ounces of milk in the 24 hours; Group 2: those obtaining from 10 to 20 ounces; and Group 3: those obtaining over 20 ounces.

TABLE VIII.

1.—*Cases in which Less than 10 oz. of Milk were Consumed during the 24 hours.*

—	No. of cases.	Average age.	Average weight.	Average amount of food in 24 hours.	Average gain per week.
		Weeks.	lb. oz.	oz.	oz.
Marylebone	51	9½	9 2	6·68	4·38
Kensington	9	16	11 10	6·5	4·87
Queen's Hospital	17	11½	9 12	6·6	1·4
2. *Cases in which between 10 and 20 oz. of Milk were Consumed during 24 hours.*					
Marylebone	82	9¾	10 6	14·0	4·66
Kensington	50	13	10 5	13·0	3·74
Queen's Hospital	47	10	10 0	14·5	2·1
3.—*Cases in which more than 20 oz. were Consumed during 24 hours.*					
Marylebone	49	9½	10 9	25·5	3·17
Kensington	25	16	13 1	27·0	2·81
Queen's Hospital	13	11½	12 12	23·5	1·9

The similarity between the Marylebone and Kensington cases is most striking. The Queen's Hospital figures are hardly comparable, for they represent the test feeds obtained in the case of infants all of whom were ill, but even this series of cases would not have differed so greatly from the first series had it not been that among the infants obtaining less than 10 oz. of milk in the 24 hours there were two or three very severe cases of illness presenting heavy losses in weight during the week.

In both the Marylebone and Kensington series the infants who for the time being were obtaining less than 10 oz. of milk in the 24 hours showed a larger weekly increment in weight (4·38 oz. and 4·8 oz.) respectively than those infants who were obtaining larger amounts. Those infants who were obtaining over 20 oz. per week showed in both of our series the smallest weekly gains in weight.

It would appear that those infants who are brought up in institutions and receive a larger amount of breast milk increase in weight more rapidly than those who attend our infant consultations as out-patients; on the other hand, among this latter class of infants it would appear that those who receive larger quantities of milk, instead of putting on more weight per week put on a smaller amount.

If our observations are reliable it is not easy to offer an explanation of this paradoxical evidence. It may be that on an average the milk which is secreted in large amount is inferior in quality, and in this connexion it must be remembered that chemical analysis only affords a very crude estimate of quality. Analysis may show the relative

percentage of proteids, fats, and sugars, but it cannot, as yet, afford a differential estimation of constituent proteid bodies, nor does it indicate whether or no they possess toxic properties. On the other hand, it must be remembered that institutional infants live under superior hygienic conditions than do the poor class of infants who attend our consultations; *ceteris paribus* the better the hygienic conditions and the more active the vital processes the greater is the demand for food. Want of air, sunlight, and all the natural stimuli for active metabolism reduce the vitality of our out-patient infants to such a debased level that it is conceivable that an allowance of food which would be physiologically appropriate for the institutional infants may be relatively excessive for the needs of our class of out-patient infant; and overfeeding, as is now well understood, leads sooner or later to malnutrition and loss of weight.

We do not claim that our figures can be regarded as criteria of the amounts of breast milk obtained by infants exposed to different and better conditions; indeed, we know from our experience of private cases that the amount of milk consumed by the latter is often very much larger. The largest individual test-feed recorded at the Marylebone Consultations is just over 5 oz., and at Kensington it is 6 oz., whereas in private cases 6, 7, or even 8 oz. are by no means uncommon measurements for individual test-feeds. We are, however, quite agreed that it is impossible to conduct breast-feeding on accurate or scientific lines without the control of an occasional "test-feed."

The test-feed is the most valuable aid to the diagnosis of the ailments of breast-fed infants which we possess. It is mere guesswork to attempt to treat cases of this kind unless we know how much milk the infant is receiving.

Infants are often brought to our clinics who have been treated by drugs for constipation when the sole cause of the condition is starvation. Again, infants are often given supplementary feeds of cow's milk in amounts of 4 or 5 oz. (we have known as much as 9 oz.), when the test-feed proves that the amount they obtain from the breast is about 1 oz., sometimes less; under such conditions it is hardly surprising that cow's milk is found to disagree. As an aid to diagnosis and for accurately adjusting the amount of food given in supplementary feedings, or at the time of weaning, the test-feed soon becomes absolutely indispensable to those who have had experience of its advantges.

It is hoped that the publication of these results will stimulate others to pursue similar lines of inquiry in order that our figures may be critically examined.

On the whole, breast-feeding is conducted more carelessly than artificial feeding, and our experiences of the methods pursued at many maternity institutions suggest that this statement is true in their case also. The results of breast-feeding are often so extremely bad that recourse is taken to artificial feeding, and the latter is often unjustly blamed for subsequent failures which more reasonably can be referred to initial mistakes in breast-feeding.

The best results we obtain both in Marylebone and in Kensington are undoubtedly those cases in which combined feeding is employed after the third month of life. In all these cases the amount of artificial food supplied is regulated by the evidence afforded by the "test-feed," and the subsequent physiological reactions of the infant.

TABLE VII.

		Weeks.			Months.						
Age		2	3	4	2	3	4	5	6	7	8
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.
Marylebone cases ...	Weight	7 10	8 8	8 11	9 2	10 8	11 12	12 1	13 11	15 3	16 15
	Weekly increase ...	0 8·36	0 5·75	0 4·57	0 4·77	0 4·15	0 4·25	0 4·87	0 3·68	0 4	0 1
Kensington cases ...	Weight	—	8 8	10 4	9 2	10 14	12 1	13 3	13 3	14 15	19 3
	Weekly increase ...	—	0 5	0 4·5	0 4·5	0 4	0 4·25	0 4	0 3·4	0 3	0 3
Queen's Hospital cases	Weight	—	—	8 11	7 12	11 10	11 12	12 1	13 5	—	17 13
	Weekly increase ...	—	—	0 3·58	0 3·55	0 2·66	0 2·51	0 4·8	70 1	—	—
Camerer's cases	Weekly increase ...	0 5	0 5	0 9	0 5	0 5	0 7	0 5	0 4	—	—
Feer's cases	Weekly increase ...	0 4·5	0 6	0 6·5	0 7	0 4	0 4	0 4·5	0 −½	0 5	0 5
Beuthner's cases	Weekly increase ...	0 3	0 4·5	0 8	0 9	0 5	0 2	—	—	—	—

PACHON'S SPHYGMO-OSCILLOMETER

AND ITS USE IN THE DETERMINATION OF BLOOD PRESSURE, WITH NOTES ON THE THEORY OF OSCILLATIONS.

BY J. F. HALLS DALLY, M.A., M.D. CANTAB., M.R.C.P. LOND.,

ASSISTANT PHYSICIAN TO THE NATIONAL HOSPITAL FOR DISEASES OF THE HEART, SOHO SQUARE; PHYSICIAN TO THE ST. MARYLEBONE GENERAL DISPENSARY.

FOR general purposes sphygmomanometric methods conveniently may be divided into two main groups: (1) those which are based upon estimation of the pulse wave below the level of the point of compression; and (2) those which are based upon estimation of movements or oscillations of the arterial wall at the level of compression.

Of the first group, perhaps the most widely used in this country is one of the modifications of the Riva-Rocci sphygmomanometer. In practice, however, such an instrument registers only the maximal or systolic arterial pressure, and it is only in experienced hands, and even then with considerable difficulty, that the minimal or diastolic pressure can be determined with any approach to accuracy. It is therefore impossible to obtain a complete blood pressure record.

With reference to the second group, for information other than that regarding the systolic pressure, we must turn to instruments which are based on the "method of oscillations." This method was first evolved by Marey,[1] who showed that if a vessel, instead of being compressed upon one surface only, was placed in a fluid medium to which pressure could gradually be applied, it was clear that by raising the pressure of the surrounding medium, a point was reached at which the internal pressure could be overcome with resultant collapse of the arterial wall. The closure of the vessel indicated the moment at which the surrounding pressure, as measured by the manometer, exceeded the intra-arterial pressure. If instead of an artery a segment of a limb was enclosed within an inelastic reservoir filled with fluid, the oscillations set up in the fluid were found to vary in amplitude with the pressure. Hence Marey endeavoured to find that pressure which was requisite to produce the largest oscillations, believing that at this moment the completely relaxed arterial walls floated freely, and that an effect was produced similar to that which would occur were the blood pressure applied directly to the manometer.

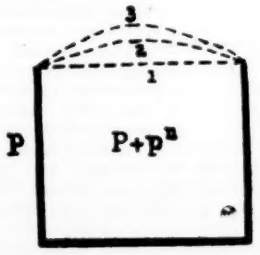
Founded on this method of oscillations many instruments

have been devised, including those of Hill and Barnard, Erlanger, von Recklinghausen, Vaquez, Pal, and Amblard, but although a great advance has been made in such instruments yet all of them have the grave disadvantage of working at inconstant pressure.

In considering instruments which register both systolic and diastolic pressures, reference must be made to the auscultatory method, which was discovered in 1905 by Korotkow,[2] and which has since been studied extensively by various workers—in particular, Krylow, Fischer, Schrumpf, Zabel, Winterhalder, and more recently in England by Oliver. But this method, although affording information as to the systolic and diastolic pressures, has the obvious disadvantages which are inseparable from any auscultatory method, and cannot be compared as a practical one with the oscillatory method as exemplified in Pachon's instrument.

Let us now consider what takes place in an ordinary aneroid apparatus, such as that of Hill and Barnard or Amblard, which may diagrammatically be represented in Fig. 1. When the instrument is at rest the pressure within

FIG. 1.



and without will be the atmospheric pressure P and the wall of the aneroid chamber will not be distended, as at (1). If now the internal pressure be raised so that the capsule assumes the position (2), the internal pressure will then be equal to the sum of the atmospheric pressure P, together with the given additional pressure p. Suppose the pressure be still further raised to p^n, the wall of the aneroid will assume the position (3), the internal pressure being $P + p^n$, whilst the external pressure remains P, the amount of distension being represented by the formula $(P + p^n) - P$.

by the invention of the sphygmo-oscillometer of Pachon,[3 4 5] which works at constant pressure throughout the whole period of investigation. I do not propose here to enter into a detailed description of the construction of this apparatus, since this has already been given.[6] Briefly, however, it may be said that Dr. Pachon has enclosed an aneroid capsule of aluminium within an air-tight and rigid metallic box. (Fig. 2.) This capsule is connected directly with an armlet, and by a three-way passage with the interior of the outer metallic box. The pressure within this system is indicated

FIG. 2.

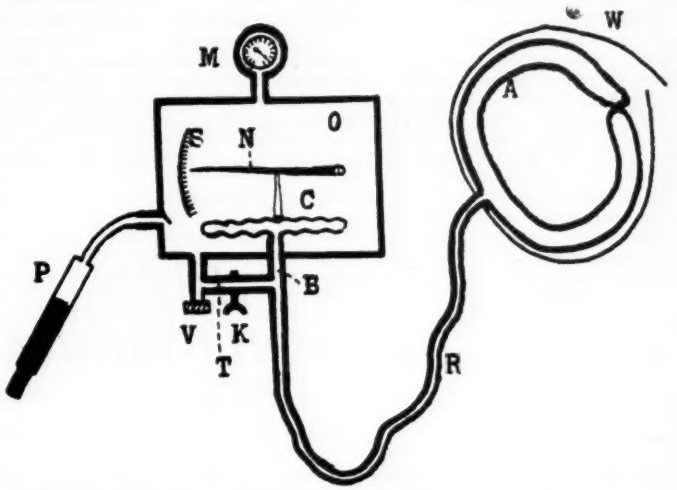


Diagram in section of the sphygmo-oscillometer of Pachon. P, pump; M, manometer; O, outer metallic box; C, capsule; N, registering needle, which is drawn too coarsely, and should taper to a fine point at the left extremity and be quite horizontal; S, oscillometer scale; V, escape valve; T, B, K, three-way channel; K, separator key; A, indiarubber armlet; W, outer inelastic webbing.

on the dial of a small manometer. The inner capsule can be cut off from communication with the external chamber by means of a separator key, and thus allows pulsations set up in the armlet to be transmitted directly to the interior of the aneroid chamber. Fig. 3 represents purely diagrammatically this instrument, (a) being the capsule and (b) the outer box.

Just as in Fig. 1, the pressure throughout the whole apparatus at rest will be the atmospheric pressure P, but if the pressure is raised to p^n, on each side of the aneroid capsule the pressure will now be $P + p^n$, the external

FIG. 3.

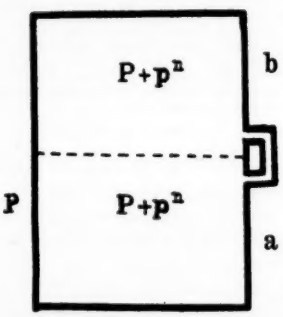
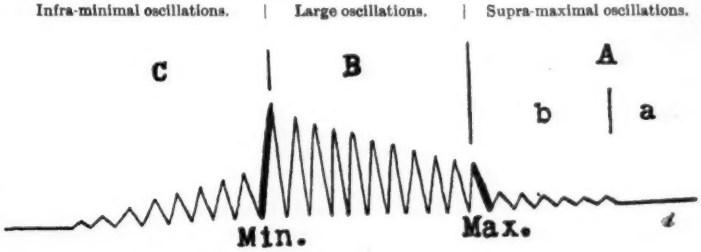


FIG. 4.



The reading in this diagram, as in Fig. 5, is from right to left.

If the capsule be in the position (2) any communicated movement due to alterations in internal pressure set up by variations in the blood pressure must of necessity be superadded, therefore the movement of the capsule will be limited and the greater p becomes the less will be the movement of the capsule. Hence it follows that an instrument of this type works at inconstant pressure, and with increasingly high grades of blood pressure its sensitiveness diminishes.

Recently, however, these difficulties have been overcome

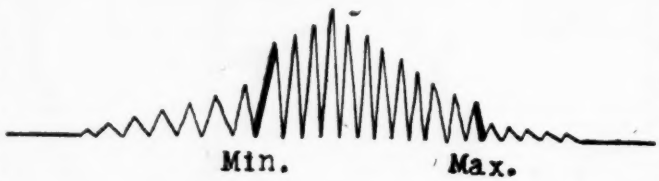
atmospheric pressure, of course, still remaining P. No displacement of the walls of the capsule therefore can take place, except that which is caused by variations in pressure transmitted to the armlet by the blood pressure. As Dr. Pachon says, the instrument is always extremely sensitive and works with constant maximal sensitiveness.

We may now consider the series of events which occurs when the method of oscillations is used. When the pressure is raised considerably above the maximal blood pressure (Fig. 4) we find a Phase A where the needle either shows:

(a) no oscillations; or (b) oscillations, equal and of small magnitude or of a negligible increase: these are perhaps better termed fibrillations. As the pressure is lowered, a point (Max., Fig. 4) is reached at which a sudden and definite increase in the size of the oscillation occurs. This point indicates the maximum or systolic blood pressure. There is then a gradual increase in the size of the oscillations (Phase B) until a point is reached at which they have attained their greatest amplitude. This point registers the minimum or diastolic pressure (Min., Fig. 4). Below this a sudden decrease takes place in the size of the oscillations which gradually disappear (Phase C).

The above represents a curve which is typical; nevertheless, variations may occur, an example of which is given in Fig. 5. Such variations are most manifest, as one would expect, when instruments working at inconstant pressure are employed, and at times there may be considerable difficulty in determining the exact point of the systolic and diastolic pressures. With Pachon's sphygmo-oscillometer, on the other hand, the greater length of oscillation due to the fact that the instrument works at constant pressure renders it extremely sensitive, and therefore enables changes in the size of the oscillations to be perceived with ease.

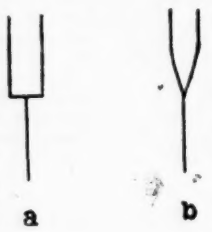
FIG. 5.



This reading, as in Fig. 4, is from right to left.

To understand the above diagram let us investigate the changes which take place in an artery under compression. The systolic pressure is that pressure which is necessary completely to close an artery and to stop all circulation below. In theory, therefore, supramaximal oscillations should not exist, and, were the lumen of the artery suddenly and cleanly obliterated, as in Fig. 6a, this indeed would be the case. In practice, however, it will be found that not infrequently a funnel-shaped depression of the artery (Fig. 6b) is produced at the upper border of the armlet. Shocks due to the blood stream acting on this funnel-shaped depression are transmitted to the registering needle, and so cause small indefinite oscillations, but no separation of the arterial wall takes place. As the pressure is decreased, at the level of the systolic blood pressure the arterial walls separate to a very slight extent and for a very short time with a resultant sudden and definite increase in the length of the oscillations. With further lowering of the pressure the arterial walls separate and remain apart for gradually increasing intervals. Hence the oscillations will become larger. At the level of the diastolic pressure—i.e., when the external pressure just equalises the internal blood pressure—the oscillations will theoretically be greatest. At this point the arterial wall supports an equal pressure alike on its inside and its outside, and, floating freely, is in a condition of equilibrium. Below this level the oscillations diminish in proportion as the external pressure progressively becomes less than the internal pressure until at length they fade away entirely.

FIG. 6.



It will now readily be understood how difficulty arises in accurately estimating such degrees of variation with an ordinary manometer working at inconstant pressure, whose capsule already is in a state of positive distension. With the sphygmo-oscillometer, on the other hand, *by reason of the constant pressure which is maintained throughout, the oscillations are reproduced in their entirety.* At times the zone of supramaximal fibrillations is well marked, but rarely is there difficulty in distinguishing the definite increase in size which denotes the systolic pressure. Further, since the oscillations are reproduced to the best mechanical advantage, not only may the various characteristics of the pulse—e.g., arrhythmia, &c.—be studied most easily, but its amplitude may be recorded in terms of divisions of the oscillometer scale.

In conclusion, I propose to give a few typical examples of the figures which may be obtained by the use of the sphygmo-oscillometer. Neither systolic nor diastolic pressure alone affords that complete blood pressure record which is given when the systolic pressure, the amplitude of the pulse, and the diastolic pressure are noted simultaneously. Take, for example, a systolic pressure of 130 mm. as estimated by Pachon's instrument. This alone might indicate that we were in the presence of a case of mitral stenosis, pulmonary tuberculosis, or various asthenic states, &c. If to this, however, we add the diastolic pressure and the pulse-amplitude and obtain a formula such as 130- 0, 5- 80, we gain information of value. Put into words, this formula means that the systolic pressure is 130 mm., the amplitude of the pulse is half a division on the oscillometer scale, and the diastolic pressure is 80 mm. Such a formula is characteristic of mitral stenosis, where we have a low systolic pressure combined with a small pulse, and a diastolic pressure which is relatively high. Let us take another example. A systolic blood pressure of 250 may indicate aortic disease, arteriosclerosis, chronic interstitial nephritis, &c., but if we obtain a formula 250-7-50, we realise at once that we are dealing with a case of aortic regurgitation. Moreover, we know that these figures are evidence of pure aortic regurgitation, since when the regurgitation is combined with stenosis the diastolic pressure will be raised to a degree varying with the amount of stenosis.

This preliminary communication is intended merely as a brief outline of the "theory of oscillations," and of the salient points of an instrument which accurately records these oscillations. In a further paper I hope to publish some of the results which I have obtained from a large number of clinical determinations of blood pressure with Pachon's sphygmo-oscillometer.

My thanks are due to Dr. Kenneth Eckenstein, assistant pathologist to the National Hospital for Diseases of the Heart, for his kind assistance in taking readings with this instrument.

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Lower Seymour-street, W.

THE SEWERAGE OF FALMOUTH.—The Local Government Board has granted permission to the Falmouth town council to borrow £3875 for a sewerage scheme and the construction of a new road.

UNIVERSITY OF LONDON.—The London Inter-Collegiate Scholarships Board announces that combined examinations in anatomy and physiology and in arts and preliminary scientific subjects will be held on Tuesday, Sept. 19th, for medical entrance scholarships and exhibitions of an aggregate total value of over £1700, and tenable at University College, King's College, and in the medical schools of Westminster Hospital, St. George's Hospital, London School of Medicine for Women, University College Hospital, and King's College Hospital. Full particulars and entry forms may be obtained from the Deans of the respective medical schools, or from the secretary of the board, Mr. Alfred E G. Attoe, University of London, University College.

FULMINATING APPENDICITIS: PRESENCE OF LIVER DULNESS: LIGATURE-TEMPERATURE.

BY F. W. FORBES-ROSS, M.D. EDIN., F.R.C.S. ENG.,
AND
QUINTIN CHALMERS, M.D. GLASG.

THE following case of acute general peritonitis, due to the sudden onset of gangrenous appendicitis, and rescued by prompt surgical aid, is deemed worthy of record, especially because it presented a classical train of symptoms so typical of the condition, with the exception of the presence of liver dulness. We also consider that the ligatures and sutures in the wall of the bowel and on the stump of the appendix should be regarded as a cause of the post-operative febrile condition, so often seen for a limited period following the operation for removal of the appendix in septic cases.

The patient, a male aged 34 years, an American from Boston, was seen by Dr. Quintin Chalmers at 9 A.M. on Oct. 19th, 1910, when he complained of a dull aching and stabbing pain over the region of the appendix. On examination the parts were tender, and some impairment of resonance was apparent, as well as slight unilateral rigidity of the abdominal parietes. The temperature was 99·6° F., and the pulse about 100. The tongue was more or less normal and moist. Rest in bed was advised, and an expectant attitude decided upon. At or about 3 P.M. (temperature 101·4° and pulse 110) the patient complained of an increase of pain, which continued until after 6 P.M., when he described himself as suddenly becoming easier. When he was seen by Mr. Forbes-Ross in consultation at 10 o'clock the same night, the patient expressed himself as feeling much better and fairly easy, but added that the pain he went through between 4 and 6 P.M. "would serve him as a memory for a lifetime." The fact was elicited that he had had three previous attacks of mild appendicitis before at intervals of about 18 months.

The physical condition was as follows. The abdominal parietes were absolutely rigid and retracted, and absolutely immobile during respiration. There was no marked tenderness over McBurney's spot, but resonance and an ill-defined tenderness (slight) over the whole abdomen, otherwise there was a sense of stomach-ache referred to the umbilicus, but nothing to compare with the pain between 4 and 6 P.M. The temperature at 10 P.M. was 102·4°, and the pulse was 124 and apparently rising in frequency. There was no absence of liver dulness. The tongue was moist and not by any means typical of the so-called "abdominal tongue." The patient was lying on his back with his legs drawn up, but had no anxious facies or sunken countenance—in fact, quite the reverse.

The diagnosis of acute general peritonitis in its initial stage was made, and immediate operation was advised as the only hope of survival of the existing attack. Naturally the patient, who expressed himself as being fairly free from the previous pain and feeling better, was decidedly opposed to operative interference, as was also his wife, but on earnest pressure ultimately consented, and at 11.30 the same night Dr. P. H. Parsons administered an anæsthetic and Mr. Forbes-Ross, assisted by Dr. Chalmers, opened the abdomen over the appendix by skin incision and separation of the muscular fibres. The abdomen contained a large quantity of white, thin, milk-like pus, which welled up through the wound from amongst the coils of the small intestine. There was little or no attempt by nature to seal off the diseased area. The cæcum was drawn out of the abdomen and the appendix sought for, but the only evidence of its existence was a greenish-grey patch with a hole of the size of a sixpence in what was apparently the cæcal wall itself. On careful examination, however, it was found that the appendix was infolded along its entire length by the cæcal wall, so that it appeared to be absent. The appendix required to be literally dug out of the wall of the cæcum. The only guide to its existence was the apparent perforation of the bowel. We believe that this tucking-away, parallel to its long axis, of the appendix in the bowel wall by adhesions, will account for the numerous instances in which appendicular abscesses (the result of chronic appendicular trouble or previous attacks) are opened, and no appendix can be discovered. The appendix is often described as "sloughed away" when really it is infolded in the wall of the bowel on its long axis. Having been shelled out from the bowel wall the appendix was ligatured close to the cæcum and invaginated by a purse-string suture and the meso-appendix stitched over the line of union. The abdomen was very gently dried by swabs inserted into the pelvis, and as little as possible beyond the removal of the appendix was attempted purposely—certainly no attempt at irrigation whatever. A large drainage-tube containing tape-gauze was inserted through the wound down into Douglas's pouch and the abdominal wound closed round the tube. The patient was returned to bed at 12 midnight and was made to sit bolt upright in bed. The next morning the pulse was 94 and the temperature 100·2°; the patient had slept fitfully and complained of thirst, but was doing well. On the second morning after the operation the case had almost ceased to present any point of interest other than the temperature, which was fluctuating between 99° and 100·6°. It was, however, confidently anticipated that on the ninth day after the operation the temperature would begin to approximate to the normal. The prediction was fulfilled. Experience seems to show that in these cases, where an abscess exists at the time of operation, and where the appendix is removed and the stump buried in the bowel wall, it requires about nine days for the ligatures and sutures to work through into the bowel and free themselves.

The removed appendix was about 7 to 8 inches long, as thick as the forefinger, and presented a complete stricture at its proximal end; hence the presence of liver dulness. In the distal portion beyond the stricture was a perfect specimen of a Boston baked bean, with intact cortical covering and two cotyledons and plumule. It was fæcally mummified. It was, of course, the cause of the previous attacks and the present gangrenous perforation of the appendix. The patient made an uninterrupted recovery and returned to his duties exactly one month from the date of the attack. At the present time (August, 1911) the wound is firm and sound and the man in robust health.

AN UNUSUAL CASE OF INTUSSUSCEPTION.

BY DOUGLAS WOOD, M.B., CH.B. ABERD.,
HOUSE SURGEON TO THE EVELINA HOSPITAL FOR SICK CHILDREN, LONDON.

THE patient, a girl just 2 years of age, was admitted to the Evelina Hospital for Sick Children on July 4th, 1910, under the care of Mr. H. S. Clogg. Her illness commenced suddenly a fortnight previous to admission. The initial symptoms were vomiting and the passage of blood and mucus per anum. Pain was said not to be a marked feature at the onset. The vomiting persisted periodically for a week, and blood was passed by the bowel for four or five days. Constipation was absolute throughout the illness, so that for a whole fortnight no fæcal matter was voided. During the fortnight she apparently had frequent attacks of intestinal colic, but for the greater part of the time she lay in bed in a listless condition, until towards the end when pain became more frequent and more severe, and she then became restless. She took fluid nourishment well after the vomiting had ceased. The abdomen was noticed to swell progressively, particularly towards the end of the fortnight. Several enemata were given, and these were either retained or returned in part without force. There was never any fæcal material in the washings, but occasionally some blood and mucus.

In view of these facts the condition of the child on admission was remarkably good. She was well nourished and of a good colour. Her eyes were clear though rather sunken, and the mouth was drawn down at the corners. She kept up almost constantly a cry, which was more of a whine than a pain-cry, which one might have expected in the circumstances. She assumed the knee-chest position in bed and strongly resented being disturbed. The tongue was dry and clean; pulse 120 and fairly good, and temperature 99·6° F. The abdomen was uniformly and considerably distended. Peristalsis was not observed. Rigidity was

absent, and the abdomen was free from tenderness. There was too much distension to allow of any swelling to be palpated. The rectal examination was negative.

There could be little doubt that the child was suffering from an intussusception and an operation was straightway performed. On opening the abdomen through a right paramedian incision it was impossible to prevent the prolapse of many coils of greatly distended bowel. An intussusception was easily delivered through the wound. It had travelled to the left iliac fossa. As is usual, the larger part was easily reduced, but the force employed in attempting the reduction of the last 6 inches or so was too great and the intussuscipiens gave way, the intussusceptum escaping through the rent. It was now seen that the intussusception commenced about 18 inches above the ileo-colic valve. About 12 inches of the small gut, including the intussusception, were resected, and an end-to-end anastomosis rapidly made. The child's condition was critical, and as the suturing had to be rapidly carried out in œdematous bowel the junction was almost certainly imperfect. For this reason, and also on account of the great intestinal distension, the bowel was drained on the proximal side of the junction by a Paul's tube. The abdominal wall was closed save in the lower part where the drainage was established.

There was marked shock from the operation, but the patient responded very well to subcutaneous saline infusion and ether hypodermically. Forty-eight hours after the operation there was a free flow from the fistula, and on the third day practically all the intestinal distension had disappeared. The child was now taking food well. On the fifth day the condition permitted of the second operation. During this subcutaneous saline infusion was continuously administered. The abdominal wound was freely suppurating, and it was impossible to exclude this source of infection from the peritoneal cavity. The wound was completely opened and the bowel bearing the tube drawn to the surface. On separating the adhesions around the previously anastomosed bowel the latter almost entirely gave away, the sutures tearing out on the slightest manipulation. The gut on the proximal side was still very œdematous, and some few inches of it, together with the site of the former anastomosis, were resected almost to the ileo-colic junction. The ends of the bowel were ligatured and invaginated with a purse-string suture. The ileum was laterally anastomosed to the cæcum. The ileum used for the anastomosis proved to be œdematous, contrary to expectation. The abdominal wall was sutured in a single layer on account of the child's condition and a drain inserted into the peritoneal cavity.

The shock following the operation was very great, and vigorous measures were necessary to combat it. The following day the condition was much improved and the bowels opened naturally. This improvement was maintained for four days, and then suddenly vomiting and marked collapse set in. The abdomen became distended, and the picture was one of acute intestinal obstruction in an already exhausted child. Food by the mouth was stopped, champagne freely administered, with saline infusions and ether and strychnine hypodermically. For the following two days the condition was critical and any operative interference was impossible. Two small stools were passed and the discharge from the wound had a distinctly fæcal odour. In a day or two it was obvious that a fæcal fistula had formed, and with this the symptoms of obstruction became relieved. It would appear most likely that the fistulous opening was at the site of the anastomosis, and presumably, from the after-history of the case, the obstruction was caused by adhesions at this site.

From this time onwards to the beginning of August the child rapidly and progressively lost weight and became extremely emaciated. The dressings were always soaked with intestinal contents. The fistula, however, showed some signs of closing, and an attempt was made to seal the opening over with guttapercha tissue and strapping. This was successful, and prevented any further escape of intestinal contents. The fistula was practically closed by the end of the first week in August. Following the closure of the fistula the child rapidly improved, and now at the beginning of September is well nourished and apparently in good health. The bowels are regular in action and of normal consistency. The wound is healed, and at present there is no suspicion of any hernia, which is remarkable considering the condition of the abdominal wound at one time.

There are some features in the case worthy of comment. One was struck principally with the extraordinary vitality of the child. She seemed to have considerable resisting powers to infection of the peritoneum, as this was freely exposed to infection at the second operation when the wound in the abdominal wall was purulent. The child had suffered from complete obstruction for a fortnight before coming into the surgeon's hands, she underwent two grave operations involving resection of some length of bowel within a period of five days, she had acute intestinal obstruction a few days after the second operation, and a fæcal fistula, through which all the intestinal contents escaped, for three weeks. The case serves to show that a child of this age can *exist* with a fæcal fistula for three weeks, and that any attempt at suturing the œdematous bowel is hopeless. Bearing these two facts in mind, should a similar case present itself, to quote Mr. Clogg, the correct treatment would be to resect the bowel and tie a tube in each end, and later to restore the continuity. In dealing with children the way is surprising in which they will sometimes successfully fight conditions which seem to be hopeless, and the above case which I have ventured to record is a striking example of such.

It may be incidentally remarked that the cause of the irreducibility of the intussusception was entirely the swelling of the intussusceptum, and not due to adhesions, which are always stated to be a potent cause. Mr. Clogg tells me that in all cases of irreducible intussusceptions which he has seen this has always been the case, and that he has never seen any adhesions between the intussuscipiens and the intussusceptum which would prevent reduction.

I am indebted to Mr. Clogg for permission to publish the notes of this case.

A DERMOID CYST OF THE TESTICLE.

BY ERNEST E. HUGHES, M.B., CH.B. VICT.,
SENIOR RESIDENT MEDICAL OFFICER, BARNES CONVALESCENT HOSPITAL, CHEADLE.

THE following case occurred at the Manchester Royal Infirmary, and my thanks are due to Mr. E. D. Telford for permission to publish it.

History.—A man, aged 35 years, a clerk by occupation, married, but no children, was admitted complaining of a swelling of the right testicle. He gave a history of some injury to the right testicle in childhood, and stated that the swelling had been present as long as he could remember. It had gradually increased in size. Some eight years ago he suffered from phthisis and has a cough at the present time. There was no history of venereal disease.

Condition on admission.—The scrotum showed the presence of a swelling on the right side suggestive of a uniformly enlarged testicle. Length, 3 inches; width, 2 inches. The skin of the scrotum was normal and freely moveable over the testicle, which was heavy, somewhat elastic, surface irregular, but not distinctly nodular. The vas and cord appeared normal. There was no translucency. A diagnosis of fibro-cystic disease of the testicle was made, and orchidectomy was performed by the inguinal route, the cord being divided at the internal abdominal ring. The patient made an excellent recovery.

Macroscopical appearance.—The appearance of the parts on removal was that of a very large testicle lying wholly within the tunica vaginalis. On opening the latter, no fluid escaped and no adhesions were found. The surface of the swelling was smooth, but showed a shallow groove running obliquely round the upper pole from above downwards and backwards and mapping off a portion 1 inch long by ½ inch broad. The epididymis was of normal size and therefore out of proportion to the size of the tumour. No hydatids of Morgagni were seen, but a well-marked vas aberrans of Haller was found on dissection of the epididymis. A vertical incision was made through the tumour along its posterior margin. The cut surface showed a complete tunica albuginea somewhat thickened, enclosing two distinct portions. An upper, solid, crescentic part marked off by the shallow groove mentioned from a lower, larger portion—the dermoid cyst. At first sight the upper solid portion appeared to be normal testicle, but this was disproved at a later stage. It was somewhat yellowish in colour and on critical examination showed numerous small cysts filled with a clear, colourless, colloid or mucoid material. The dermoid cyst was more or

less loculated and was separated from the upper solid portion by a fibrous layer which formed part of the cyst wall. The contents of the cyst consisted of the usual whitish sebaceous material with long, black, curly hairs and irregular flakes of bony consistence.

Microscopical examination.—Sections were cut and examined of the following:—(1) Vas deferens; (2) epididymis; (3) solid crescentic body; (4) wall of the dermoid cyst; and (5) contents of the dermoid cyst.

1. The vas deferens appeared normal. Its lumen was patent, but the walls were perhaps rather thicker than usual.

2. The epididymis. This section was planned to go through the epididymis at its junction with the two parts of the tumour. It showed a normal appearance of the canal of the epididymis with a condition as described below of the tumour.

3. The solid crescentic body. This section at once showed the complete absence of testicular structure. There was a thick fibrous capsule—the tunica albuginea—surrounding a loose fibrous stroma in which were numerous cysts, irregular in size and shape, lined by one or more layers of cells, and filled with a substance staining feebly with hæmatoxylin. Not a trace of a seminiferous tubule was seen.

4. The wall of the dermoid cyst. This showed a laminated fibrous appearance, lined internally by true skin in places, by stratified epithelial cells in others.

5. Contents of the cyst. (*a*) A piece of the putty-like sebaceous material was examined. It showed the presence of true skin, consisting of several layers of squamous cells lying on a rete Malpighii. The papillæ were very rudimentary. Numerous large sebaceous glands and many sweat glands were seen, but no hair follicles. (*b*) An attempt was made to show the structure of the hard, bone-like content. The section showed the appearance described of the cyst wall, with, in addition, some smooth muscle fibres and a small area of dense tissue, but no bone and no cartilage.

Remarks.—Testicular teratomata are of very uncommon occurrence, and very few cases are on record. They are always unilateral.

In cases reported by Verneuil,[1] Bland-Sutton,[2] D'Arcy Power,[3] Jackson Clarke,[4] and recently by Barrington,[5] where a side on which the lesion has occurred has been mentioned, that side has always been the right. A left-sided testicular dermoid has yet to be recorded, but a case reported by Bilton Pollard[6] in which a dermoid cyst was situated outside the tunica vaginalis and adherent to the left testicle, is hardly to be reckoned as a true testicular dermoid. Another feature which appears to be commonly associated with testicular dermoids is the presence of small cysts filled with a material variously described as gelatinous, mucoid, or colloid. What the exact significance of these cysts is one can hardly say. They may represent a degenerative condition of the testicular body, partial in some cases, complete in others (as the above), where no trace of testicular substance can be found.

Manchester.

[1] Verneuil: Archives Générales de Médecine, 1855, vol. v., p. 641 vol. vi., pp. 21, 191, 299.
[2] Bland-Sutton: Tumours, fourth edition, 1907, p. 533.
[3] D'Arcy Power: Transactions of the Pathological Society, vol. xxxviii., p. 224.
[4] Jackson Clarke: Ibid., vol. xlvii., p. 148.
[5] Barrington: THE LANCET, August 13th, 1910, p. 460.
[6] Bilton Pollard: Transactions of the Pathological Society, vol. xxxvii., p. 342.

THE ROYAL DENTAL HOSPITAL AND LONDON SCHOOL OF DENTAL SURGERY.—A series of post-graduate lectures will be given during the months of October and November, 1911, on Tuesdays, at 6 P.M. The lectures announced are as follows:—Oct. 17th, Heredity in Teeth and Jaws (Mr. J. G. Turner); Oct. 24th, Some Hospital Cases (Mr. W. H. Dolamore); Oct. 31st, The Relative Effect of Metal and Vulcanite on the Tissues of the Mouth (Mr. G. H. Berwick); Nov. 7th, The Relationship of Periodontal Disease to General Health (Mr. J. F. Colyer); and Nov. 14th, A Review of the History of Dental Caries, and the Present Position of the Question (Mr. J. H. Mummery). Further information will be supplied by the secretary of the hospital. Past and present students of the hospital and internal students of the University of London will be admitted to the lectures free.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTES ON TWO SOMEWHAT UNUSUAL ABDOMINAL CONDITIONS IN CHILDREN.

BY VERNON H. STARR, M.B., B.S. LOND.,
LATE HOUSE SURGEON TO THE ROYAL DEVON AND EXETER HOSPITAL.

THESE two cases being, I believe, somewhat uncommon I thought a short note of them might be interesting. Both cases were under the care of Mr. C. E. W. Bell, surgeon to the Royal Devon and Exeter Hospital, to whom I am indebted for permission to publish them.

CASE 1. *Acute intussusception caused by a Meckel's diverticulum.*—The patient, a girl, aged 6 years, was taken ill in the afternoon of Sept. 26th, 1910, with pain in the stomach; no particular notice was taken of it. She vomited that night and looked pale. On the 27th she was in great pain and the vomiting continued. There was also marked tenesmus but no result; on one occasion only it is said she passed blood and mucus. A glycerine injection gave no result. She was seen by a medical man in the evening, and later at night she was removed to hospital.

The child, who came from an orphan home, was not very robust in appearance. On admission the temperature was normal and pulse 120. She complained of pain to the right of the umbilicus. The abdomen was generally soft and resonant, slight rigidity could be made out over the right rectus, but no definite lump could be felt. Rectal examination showed that the rectum was empty and ballooned; at the tip of one's finger a mass could be felt on the right side like a thickened appendix. Fotus were applied. There was no vomiting during the rest of the night, but she was very restless and the tenesmus continued. Early in the morning—i.e., of the 28th—she was in much pain and the abdomen was more rigid. Also now a definite sausage-shaped tumour could be felt, extending from the right of the umbilicus to the anterior superior spine and curling upwards towards the hepatic flexure.

An operation was performed and lasted one and a half hours. The mass was soon delivered through the wound, and at first looked like a volvulus. A mass could be felt in the cæcum, but the appearance was not that of an ordinary intussusception. After careful and considerable manipulation, owing partly to the tightness of the constriction and the poor condition of the bowel in some places, the intussusception was reduced. It was then found that it had been caused by an invagination of a Meckel's diverticulum, which had carried both limbs of the bowel through the ileo-cæcal valve, thus forming a U-shaped intussusceptum. The diverticulum was situated about two feet from the ileo-cæcal valve; it was two inches long, and in its congested state as thick as a finger. No resection was performed and the wound was closed rapidly. The patient was very collapsed, and in spite of saline infusion did not really rally, dying at 9.30 the same night.

CASE 2. *Strangulated hernia in a child aged 5 months.*—The patient, a male, was admitted on August 25th, 1910, suffering from a swelling in the left inguinal region. The child was otherwise quite normal and healthy. He had been breast-fed. No rupture had been noticed at birth, but when between two and three months old the child cried a good deal, and on one occasion could not pass urine. The medical attendant found a hernia down and replaced it. It had been down for five hours. On August 24th, at about 5 P.M., the mother again noticed a swelling in the left inguinal region and the child seemed in great pain. He also had retention of urine. Taxis was tried unsuccessfully by the local medical man. Fotus were applied but did not give relief. Fæcal vomiting began at 1 P.M. on the 25th. The bowels had not been opened since the evening of the 22nd.

On admission at 2 P.M. the child's temperature was 101·4° F. and the pulse 128. A hard, tender swelling was present in the left inguinal region. An operation was performed at 2.30 P.M. A very thin sac was found, in which was a coil of small intestine in a very congested condition.

The opening at the internal ring was very small. Herniotomy was performed and the pillars were sewn up. The child had a normal action the same evening. There was no vomiting and he made a good recovery, being discharged on Sept. 9th.

Church Mission Hospital, Peshawar, N.W. India.

EVAGINATION OF MECKEL'S DIVERTICULUM.

BY J. W. THOMSON, M.A., M.B., C.M. ABERD.,
ASSISTANT SURGEON, GENERAL HOSPITAL, WAKEFIELD.

MECKEL'S diverticulum, the remains of the omphalomesenteric or vitelline duct which connects the yolk sac to the convexity of the U-shaped primitive intestine, should have disappeared by the sixth month of fœtal life. It springs from the ileum about 100 cm. in adults and 30 cm. in newborn children above the ileo-cæcal junction, but it may be found as high as the duodenum or jejunum, or even in the cæcum or colon, according to which limb of the primitive intestine undergoes development. Kelly describes four types of Meckel's diverticulum. In the first the canal is short; there is a broad fissure at the umbilicus through which fæcal matter is discharged. The distal part of the ileum is insufficiently developed and the anus is constricted or occluded. In the second type the umbilical opening is smaller, the canal is longer, and there is no constriction or occlusion of the anus, and fæces pass in the normal way. This type may be produced at birth if the diverticulum still extends into the cord and becomes tied off with it. The case described below was originally an example of this variety. In the third type the distal portion of the vitelline duct has become obliterated, forming a fibrous cord, the filum terminale or terminal ligament. The fourth type is the variety of Meckel's diverticulum usually met with.

Meckel's diverticulum is the cause of intestinal obstruction in 5 or 6 per cent. of such cases in the ileo-cæcal region, and numerous are the ways in which it may bring about this condition, varying with the stage at which the obliterative process has been arrested. The obstruction may depend on the vagaries of attachment of the terminal ligament or the formation—knot or otherwise—which it may assume when unattached. The part it plays in intussusception is well known, while as a result of inflammation of the diverticulum paralytic ileus may be caused, or stenosis of the intestine may occur from adhesions, or from the pressure of an abscess. Ileus from evagination, partial or complete, of Meckel's diverticulum must be a very rare occurrence.

The patient was a baby, 13 months old, and was admitted to hospital on Jan. 7th, 1910. After separation of the cord an opening was noticed at the umbilicus from which, if the child had diarrhœa, fæcal matter was passed, but from which there was a constant slight discharge of a sticky, watery fluid. There was always a pouting of the mucous membrane when the child cried or otherwise strained, the degree of prolapse varying with the straining effort. Some hours previous to admission the child was straining and the diverticulum was completely everted. The everted diverticulum presented rather a puzzling appearance. At first sight it looked like a knuckle of deeply congested distended intestine about two inches long lying on the abdominal wall. On closer inspection it was noted that an aperture existed at the distal end and that the outer covering was of mucous membrane. The child could retain nothing. The abdomen was large, but not much distended, and I think the possibility exists that gas might find an outlet through the diverticulum. Reduction at this stage was out of the question and operation afforded the only hope of recovery. Following therefore somewhat the umbilical method of Mayo, a circular incision through the skin round the diverticulum was made and the abdomen opened. The everted diverticulum, lined internally with serous membrane, with its contained loop of afferent and efferent intestine was lifted out, clamps were applied, the intestine was divided, and end-to-end anastomosis performed. The child's condition rapidly improved, and it was fed from the bottle from time to time and seemed to be making favourable progress, but died suddenly ten hours afterwards in a convulsion.

With regard to the treatment of this rare condition it appears to me that, if the case is seen early and the child is in poor condition, reduction might succeed with or without an anæsthetic, aided, perhaps, by incision of the umbilical opening, recurrence being prevented by an appropriate dressing supported by strapping or an umbilical truss. Operation might then be resorted to under more favourable circumstances. Failing reduction, or as an alternative method, the diverticulum might be excised and the possibility considered of suturing the aperture in the intestine. As the structure of the diverticulum is similar to that of the intestine, part of the former might be used to close the opening or to strengthen the line of suture. Another method that the surgeon might be compelled to adopt would be to remove the diverticulum and suture temporarily the aperture in the intestine to the umbilical opening. If the child were in good condition the operation performed in the above case would seem to be eminently satisfactory.

Wakefield.

Reviews and Notices of Books.

A Clinical Atlas of Sectional and Topographical Anatomy. By RICHARD J. A. BERRY, M.D. Edin., M.D. Melb., F.R.C.S. Edin., F.R.S. Edin., Professor of Anatomy in the University of Melbourne. With 60 plates in colours. London and Edinburgh: William Green and Sons. 1911. Price 42*s.* net.

BOTH author and publisher are to be congratulated on the production of this volume, for the Clinical Atlas is a very attractively got up publication upon which a great deal of care has been lavished by all concerned in its making.

It is to the wealth of material available at the University of Melbourne that Professor Berry owes his opportunities for carrying out a large number of carefully planned sections of formalin-hardened and frozen bodies. He has been fortunate in his opportunities and wise in the use he has made of them. Great efforts have been made to ensure the accuracy of the reproductions of the actual sections, and to this end photography has been employed. We may miss, perhaps, the delicate detail of the beautiful plates of Braune and of Symington, but at least we are compensated by the knowledge that no craftsman's personal factor has been introduced, and that what we study in the plates is the actual condition in the body under observation. The methods employed are thoroughly up-to-date, and a band-saw driven by electricity has replaced the more laborious contrivances used by former workers in the field of sectional anatomy. In these details of technique Professor Berry's work marks a great advance upon that of his forerunners; but the innovation which most distinguishes this atlas is the cutting of the sections in planes recognised by the clinician, rather than in some arbitrary series of lines which have no meaning in the ordinary examination of the living body. The planes advocated by Dr. Christopher Addison have been chosen by the author, in order that the clinician may study the sectional anatomy of the body along lines whose surface markings are familiar to him. Sections taken between these well-recognised planes are indicated by their distance in centimetres from the planes. To assist the student in locating in the actual body the structures which he studies in the sections, the cadaver has been photographed while still intact with the plane of each individual section marked clearly upon it. It is therefore only necessary to turn to these plates to see exactly where the slice under examination came from, and so to build up a reconstruction of the organs as they lie beneath the surface of the body. Two such reconstructions are given by the author, and others could readily be made from the plates.

For the study of cranial topography the head has been cut in the transverse plane into ten slices at measured intervals

below the vertex. The fact that the head of an Australian native was used for section adds an interest—but perhaps hardly a corresponding measure of clinical utility—to these plates. The trunk has been cut both in transverse and sagittal planes, and a series of dissections of regions of special clinical interest is also added. A very complete atlas is therefore produced, and by a uniform reduction of its plates it has been brought within the limits of a volume which is easily handled. Braune's work possessed the merit that all its plates were of life-size, and that actual measurements could be made from them, and his atlas was therefore of an uncomfortably large size. Professor Berry has sacrificed the advantages of life-sized reproduction, but he has made his book an easily manageable one. A bibliography of sectional anatomy is given, and in it we rather miss the mention of the beautiful work on the sectional anatomy of the child done by Professor Symington. Since the subjects used by Professor Berry are all adult—and, indeed, mostly rather aged—the two works may be considered as the complements of each other.

The work is certain to appeal to clinicians, and there is no doubt that the plates can be relied on as actual representations of the position of the organs in the sections of the subjects selected for examination.

Les Nouvelles Mycoses: Exascoses (ex-Blastomycoses), Oïdiomycoses, Sporotrichoses, Botrytimycose, Oosporoses, Hémisporose. Par MM. DE BEURMANN, Médecin de l'Hôpital Saint-Louis à Paris, et GOUGEROT, Professeur Agrégé à la Faculté de Médecine de Paris. Paris: Masson et Cie. Pp. 165. Price, paper, 2.50 francs; boards, 3 francs.

THIS little work is one of the volumes of the Encyclopédie Scientifique des Aide-Mémoire, and its inclusion in this series indicates that the subject is not considered to be of merely academic interest. These mycotic infections can be regarded no longer as pathological curiosities, but have assumed an important place in medicine; this point is emphasised by Professor Landouzy in the introduction. That comparatively little interest has been taken in the subject in this country is probably due to the fact that, though very widely spread, they are either rare or have escaped observation in England, and no reports of English cases of blastomycotic or sporotrichic infection are mentioned in this book. Their practical importance lies in the fact that all these fungi can produce granulomata, and the diseases caused by them are liable to be mistaken for tuberculous or syphilitic infections, with unfortunate results in treatment and prognosis. As the authors point out, the distinctions formerly drawn between bacterial and mycotic infections do not hold good. These fungi, like the bacteria, act by means of their toxins, and produce humoral reactions leading to the appearance of agglutinins, precipitins, opsonins, and bodies capable of fixing complement. Immunity has been produced and patients give skin and other reactions when inoculated with killed and disintegrated cultures.

The title shows the range of infections dealt with. As is natural, the longest and most important section of the book is occupied by a consideration of sporotrichosis. The authors have especially studied these infections, both clinically and experimentally, and to them we owe the discovery of the sporothrix Beurmanni and the most useful methods of diagnosis. These latter consist in culture in the cold on Sabouraud's medium, employing Gougerot's artifice (*coulée de pus sur le verre sec*) of inoculating the tubes by allowing the pus to flow over the dry glass instead of over the surface of the medium, and the use of sporo-agglutination according to the method of Widal and Abrami. Questions of nomenclature and classification are also considered, but not at the expense of more important practical matters. There are a few illustrations.

The book is a masterly little treatise which should prove of service to the practitioner.

Thérapeutique Usuelle du Praticien. By ALBERT ROBIN, Professor of Clinical Therapeutics at the Faculty of Medicine, Paris. Second Series. Paris: Vigot Frères. 1911. Pp. 551. Price 8 francs.

IN our review of the first volume of this series (THE LANCET, March 18th, 1911, p. 746) we explained the plan which Dr. Robin had adopted in order to render the work interesting and practical—namely, that he selects certain morbid conditions that yield more or less readily to systematic treatment, and examines at length the general considerations which should determine the therapeutic measures to be used, and then he explains in detail how these measures should be applied. In the present volume diseases of varied natures are discussed. The first five sections are devoted to a consideration of the treatment of typhoid fever, and numerous hints are given as to the regulation of the diet and the management of complications.

The therapeutics of acute articular rheumatism, of polyarthritis deformans, and of acute and subacute gout are also fully described. Throughout the book Dr. Robin adduces numerous typical cases on which to found his remarks; this lends it a practical aspect, which adds to the interest and usefulness of the manual. Amongst other diseases the treatment of which is detailed, are diabetes, pneumonia, acute œdema of the lungs, bronchitis, and paralysis agitans.

Dr. Robin writes in a pleasant manner and one easy to follow. The directions as to the use of drugs or of other therapeutic methods are given fully and plainly, so that as a work of reference this series will prove of value in actual practice. The only drawback is that the diseases are not arranged in systems, so that unless a general index be subsequently published it will be difficult to ascertain in which volume to look for the required information.

What to Eat and Why. By G. CARROLL SMITH, M.D. London and Philadelphia: W. B. Saunders Company. 1911. Pp. 310. Price 12*s.* net.

THE author states in his preface that he has not attempted to cover the whole subject of dietetics, but has aimed to describe for the medical student, and particularly for the busy practitioner, the fundamental elements of food, and the principles underlying its use, both in health and disease; so that the country practitioner may not be under the necessity of sending his patient to be dieted by a city specialist. The chief questions propounded for settlement are: (1) How much protein should be given; and (2) what should be the proportion of fats and carbohydrates. After an introductory chapter on the uses of food, the conditions of obesity and emaciation are discussed; the chief pathological conditions are then considered in order, and appropriate dietaries recommended. Referring to Chittenden's researches, the author advises his readers to stick to the Voit standard of 100 to 120 grammes protein daily, "until stronger evidence of a better is produced"; for sufficient time has not yet elapsed for clinicians to prove or disprove Chittenden's results. Dr. Smith has not found that protein, taken in the usual moderate amounts, does any harm to the system, so long as digestion and elimination are satisfactory; but he believes that intestinal disturbances do often result from over-taxing the digestion with carbohydrates.

We are surprised to find the author referring to "the quite prevalent habit of wine-drinking among young

ladies"; he condemns the practice, which, however, is not common in this country and is growing less common, while, surely, it is very rare in the United States. Again, with regard to the active business man subject to stress and strain, which cannot always be treated by rest and sleep, Dr. Smith says (p. 35) that the stimulus of food, coffee, and tea is insufficient to meet the exhaustion that often results: "Alcohol seems to opportunely and satisfactorily afford the necessary prop," and to be less harmful than giving up the struggle, which often means great financial loss and perhaps ruin. We fear that this opinion may be taken to imply more than the author really means, and we regret that it should be so unguardedly expressed. On the following page it is stated that for persons in health under 30 alcohol is unnecessary and to be avoided; its occasional use in middle life is advisable, under medical direction. This is reasonable enough, but is hardly consistent with the advice just quoted.

There is considerable originality of thought and of expression in this work, which is obviously the outcome of large experience. Everyone may not agree with the author, but his utterances are suggestive and are attractively set forth. It is unfortunate that there are a large number of misprints. "Discrasia" may be designedly phonetic, but "kal" on p. 212, presumably an abbreviation for "calories," can hardly be accepted. On p. 26, line 8, "percentage" of protein, &c., is written where "weight in grammes" is what is intended to be stated.

Diagnostik der Nervenkrankheiten. Von Dr. L. E. BREGMAN, Oberarzt am jüdischen Krankenhaus in Warschau. With 193 illustrations. Berlin: S. Karger. 1911. Pp. 535. Price, paper, M.12; bound, M.13.60.

THE symptomatology of nervous disease has become so rich, and methods of examination so many and complex, that the general practitioner is unable to keep himself abreast of the advances in neurology in many instances. A volume such as the one under review, which has been compiled from the point of view of the practising physician, cannot fail to be of considerable utility. He comes into contact with nervous cases the diagnosis of which is often by no means easy or straightforward; but with this book to guide him he will be able to appreciate the meaning of symptoms and to reach an adequate diagnosis on which to base his treatment. Dr. Bregman has written in great detail from the standpoint of symptomatology; motor and sensory changes, paralyses and involuntary movements, disturbances of the reflexes and of the special senses, aphasia, apraxia, vaso-motor, and other systemic alterations, are all handled with conspicuous ability and lucidity. Most of the illustrations are well reproduced and there is an excellent index. The book can be cordially recommended to the student and practitioner, for it combines conciseness of description with a wide range over the vast field of neurological symptoms and signs.

Die Erkrankungen des Herzbeutels und ihre Behandlung. (*Diseases of the Pericardium and their Treatment.*) Von Dr. FRANZ SINNHUBER, Königsberg i. Pr. With 18 figures in the text. Berlin: August Hirschwald. 1911. Pp. 114. Price 3 marks.

DISEASES of the pericardium are, as a rule, dismissed with somewhat scant reference except in the larger text-books on medicine. They are of considerable importance clinically, and their successful diagnosis and treatment require careful discrimination and sound judgment.

Dr. Sinnhuber supplies in the present monograph a useful study of the various affections of the pericardium. He lays special stress upon considerations of treatment, and he gives useful and detailed directions in regard to paracentesis in large effusions. The operations of pericardiotomy and of cardiolysis are also carefully considered, and an analysis is given of the recorded instances of cardiolysis carried out in cases of pericardial adhesion. The physical signs of adhesive mediastino-pericarditis are considered in detail, and an extra-diastolic sound described by Brauer is mentioned as occurring in this condition. A useful bibliography is given at the end of the monograph.

The Modern Treatment of Alcoholism and Drug Narcotism. By C. A. MCBRIDE, M.D. Tor., L.R.C.P. & S. Edin. London: Rebman, Limited. 1910. Pp. 376. Price 6s. net.

Dr. McBride, in the first chapter of his work on "The Modern Treatment of Alcoholism," takes occasion to inform his readers that "there is still a deplorable number of physicians in this country who stoutly refuse to believe inebriety to be a disease and as firmly refuse to credit its curability." This passage sufficiently indicates the author's standpoint; he regards inebriety as a specific disease for which it is reasonable and expedient to seek out a specific remedy. The adoption of such a view is attended by a somewhat peculiar difficulty; the author has not only to justify the claims of the particular line of treatment which he advocates, but he has also to demonstrate to a more or less sceptical public the existence of the disease for which this treatment is designed. And this is by no means an easy task, nor is it probable that the advance in our scientific knowledge of the subject will diminish its difficulties; for the more we learn about the inebriety of which Dr. McBride treats, the more we are likely to recognise that we are dealing with a particular manifestation of a general instability of brain, and not with a definite morbid entity. Dr. McBride has not perhaps sufficiently recognised the need of this preliminary proof of the theory of inebriety which he holds; he has been content to affirm the theory with conviction and to point to the practical results which he has obtained as an *a posteriori* evidence of its validity.

Proceeding on the assumption that inebriety is to be cured by some drug capable of counteracting the organic craving which he postulates as the origin of the disease, Dr. McBride claims to have found this specific in a method of treatment of which the main element is the administration by hypodermic injection of gradually increasing doses of strychnine and atropine. It is claimed for this method that "it cures inebriety" within six weeks, and this without interfering with the patient's liberty; that "it absolutely destroys the craving for alcohol" so that "it never returns of its own accord"; it even produces a revulsion against alcohol in any form. It will be seen that Dr. McBride rates his method of treatment very highly, and it is therefore to be regretted that he has not given more numerous and more detailed records of his cases, which is the more imperative inasmuch as the same method has failed to give such favourable results when it has been tried by other observers. This conflict of testimony may lead to some doubt as to whether Dr. McBride's results may not have been due chiefly to the suggestive influence of the enthusiastic physician. And this doubt will certainly be strengthened when the reader learns that the virtues of the treatment operate only with patients who wish to be cured. The class of inebriates whom the author describes as "voluntary drinkers," and who, he says, "get drunk from mere vice," are not influenced by the strychnine and atropine treatment, though it is not explained why these drugs should not be capable of producing in an individual of this sort the same organic aversion to alcohol which they are alleged to produce in the victims of the specific drink

craving. On the whole, therefore, while the author's confidence in his method is very admirable in a critical and incredulous age, it is doubtful whether he is likely to communicate his enthusiasm to his readers.

LIBRARY TABLE.

A Handbook of the Tsetse Flies (Genus Glossina). By E. E. AUSTEN. With 10 coloured plates. Printed by order of the Trustees of the British Museum, London. 1911. Pp. 110. Price 5*s.* 6*d.*—This timely and useful handbook is an extension of an earlier handbook written by the same author and also published by the Trustees of the British Museum. Mr. Austen, of the department of zoology at the British Museum, is a well-known authority upon insects, and thus brings to the consideration of these flies the prestige of an expert. His main object has been to define accurately the 14 species into which the genus as at present known is divisible; but the usefulness of the manual is greatly increased by notes upon the mode of life of the biting flies and by precise records of habitat. As is well known, the pressing interest of this small genus of diptera is due to the deadly tsetse fly, deadly not because of its bite but by reason of the carriage of disease to man along with that bite. In this country we have a member of a genus allied to glossina—viz., stomoxys—whose bite is well enough known and which is often regarded as an ordinary housefly that has taken to a more predatory life. It has, of course, nothing whatever to do with the common housefly, but is a relative of the purely Arabo-African glossina, though it is not a disease-carrier. The two genera, however, though much alike, can be distinguished, as the author indicates, by a sketch showing the position of the wings during rest. It is very important to have readily accessible a trustworthy means of identifying the various species of tsetse flies, for it is by no means all of them which are concerned in the transmission of sleeping sickness and other trypanosomiases. The excellent coloured plates, combined, of course, with the written details of structure given under the heads of the various species, should render identification easy.

Maladies des Nerfs. By BERNARD CUNEO, Professor agrégé in the Faculty of Medicine; Surgeon to the Hospitals of Paris. Volume X. of the *Nouveau Traité de Chirurgie.* Published under the direction of A. LE DENTU and PIERRE DELBET. With 50 figures. Paris: Baillière et Fils. 1911. Pp. 174. Price, paper, 4 francs; bound, 5.50 francs.—This fasciculus of the "Nouveau Traité de Chirurgie" is concerned with the diseases of nerves—traumatic, inflammatory, neoplastic, and so on. The physiology of nerve degeneration and regeneration is described in detail, and the treatment of nerve wounds is well handled. This is true, not merely as regards the surgical technique of nerve anastomosis, but also for the various trophic, vaso-motor, and secretory complications of nerve lesions. Traumatic neuritis is the subject of one of the best chapters in the work. Plexiform neuroma and Recklinghausen's disease and other neoplastic conditions are discussed. Many of the illustrations have been especially drawn for the book, and have the merit, therefore, of freshness and up-to-dateness. There are useful references to the literature. The book maintains the high level of scholarship that we associate with the Parisian school of medicine.

On the Production of Pure Milk: An Account of the Methods Employed at the Infants' Hospital Farm. By RALPH VINCENT, M.D. Durh., M.R.C.P. Lond., Senior Physician and Director of the Research Laboratory, the Infants Hospital, London. London: P. S. King and Son. 1911. Pp. 22. Price 6*d.* net.—This lecture contains a description of the farm at which all the milk used at the Infants' Hospital is produced. It gives also a series of pictures of the buildings and dairy apparatus, refrigerator, power separator, and air-wall churn. The herd consists exclusively of Dairy Shorthorns, because they are said to be steady milk-yielders and their milk of the best kind for infant feeding; also they make good meat when no longer of use for milk production; and there is no difficulty in replenishing the herd, as there would be with fancy cattle. Jersey, Guernsey, and Alderney cows are excluded as unsuitable for infant feeding, their milk containing large fat globules. To the objection that such a plant sounds very like costly milk Dr. Vincent replies that the milk costs the hospital less than 3*d.* a quart. The lecture forms interesting reading.

Camping for Boys. By J. H. WHITEHOUSE, M.P., Honorary Secretary to the National League of Workers with Boys, and Warden of the Secondary Schoolboys' Camp. London: P. S. King and Son. 1911. Pp. 72. Price 1*s.* net.—This little book tells the story of the camp founded a few years ago to organise the holidays of boys attending the grammar schools and secondary schools of the country. The camp was intended to exercise a vitalising influence on the minds and characters of the campers, to correct some of the limitations of life, to develop and draw out the best and bravest in them, and to bring a fuller spirit of chivalry to the lads within it. Chapter I. tells the story of the Secondary Schoolboys' Camp. Chapter II. describes its educational work in history and geology, architecture, collecting, kite-making, nature-study, first-aid and life-saving, literature, music, and civic teaching. Chapter III. deals with camp excursions, and Chapter IV. with camp games and sports. Chapter V. describes a typical day in camp. Chapter VI. deals with camp craft, and describes the pitching and care of camps. Alfred Noyes's "Song of England" is reprinted, and there is a good list of books bearing on the various subjects of interest in camp life. The book is freely illustrated. All concerned with camp and outdoor life for boys will find it of interest.

Low's Handbook to the Charities of London, 1911. London: Charles H. Sell. Pp. 248. Price 1*s.*—This well-known book is now in its seventy-sixth year of publication. More than 12,000 charitable institutions are arranged in alphabetical order, and brief details are given of the objects of the institutions, their date of formation, income and expenditure, the names of the treasurers and the secretaries, and so forth. There is also a classified table of contents. It is pointed out in the preface that the year 1910 was an unfortunate one for charities, the majority of which have had to record a decrease in income, while it is, of course, obvious that those conditions which restrict the incomes of charities cause an increase in the claims made upon them.

Maternity Primer. By A. H. F. BARBOUR, M.D. Edin., LL.D., Physician to the Edinburgh Royal Maternity Hospital. Edinburgh: William Green and Son. 1911. Pp. 165. Price 1*s.* net.—This little book consists of notes that were originally printed for the use of nurses commencing their maternity training, on which account the language used is, as far as possible, familiar rather than technical, and the information intended to be conveyed, instead of being baldly stated, is developed by a process of constructive reasoning or explanation. The book can be commended to the novitiate nurse, and even to the medical student beginning his midwifery; for to him it will serve, if properly used, as the bird's eye view presented by a low power, so to speak, before he begins to examine the intimate detail through the higher power of scientific text-books. It does not stop short with

the confinement, but has some useful remarks on the hygiene of the baby.

Ueber abnorme Lage der Männlichen Keimdrüsen mit besonderer Berücksichtigung des Kryptorchismus. (On Abnormal Positions of the Testis, with Especial Reference to Cryptorchism.) Von Dr. med. H. VON FOTH. Leipzig: Otto Wigand. 1910. Pp. 89. Price M.2 40.—In this work we find a general account of the misplacements of the testis and a classification of its abnormal sites. The treatment to be employed is discussed, and the author gives the details of five cases in which he had operated for misplaced testes, in several of which a hernia was also present. A bibliography with 252 references is a valuable addition.

Cat's Cradles from Many Lands. By KATHLEEN HADDON. London: Longmans, Green, and Co. 1911. Pp. 95. Price 2*s.* 6*d.* net.—Until comparatively recent years very little was known about the pastime which, in this country, has received the name of cat's cradles, although the amusement to be derived from making patterns and shapes in string is well known to people in almost all parts of the globe. There now exists a very good bibliography of the subject, but there is still much to learn about these string figures of interest to anthropologists and ethnologists. In "Cat's Cradles from Many Lands" Miss Haddon describes some 50 figures, and has adopted the system of nomenclature invented by Dr. W. H. R. Rivers and her father, Dr. A. C. Haddon. By the aid of this system and the clear illustrations there should be little if any difficulty in reproducing the figures shown, though it sometimes requires a considerable stretch of the imagination to see in them the forms indicated by the names. It has been suggested that the making of these figures might form a useful pastime for invalids, while it is possible that the amusement might prove of service in breaking the tedium of a long railway journey. In the education of the memory and of the tactile sense cat's cradles might also find a place in the kindergarten, and the clever teacher could improve the occasion by giving useful knowledge to the pupils concerning the peoples of other lands.

JOURNALS AND MAGAZINES.

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., Professor ALEX. MACALISTER, Professor ARTHUR THOMSON, Professor ARTHUR KEITH, and Professor ARTHUR ROBINSON. Vol. XLV. Third series, Vol. VI., Part. IV. July, 1911. London: Charles Griffin and Co. Annual subscription 21*s.* post free.—The present number is mostly devoted to subjects of embryological interest, for no less than eight of the 12 papers comprised in the issue are concerned with developmental problems. For the most part the papers deal with reconstruction models of embryos, human and otherwise, and five of them are concerned with the study of the head region. Dr. J. W. Jenkinson contributes a paper on the Development of the Ear-bones in the Mouse, and briefly his findings are that the stapes is derived from the dorsal median portion of the hyoid arch, while the incus and malleus are formed in the upper part of the blastema of the mandibular arch. Dr. Jenkinson has used very early stages to determine the precise development of the ossicles, and in this way it is possible he has succeeded in setting at rest this most debated point of vertebrate morphology. His paper possesses the advantage that, in addition to being illustrated by excellent figures of the wax model as a whole, it contains clear diagrammatic drawings of the more important members of the series of sections from which it was reconstructed. Again, after a clear statement of the detailed investigation of the sections and the models, the author provides a summary of his conclusions and a comparison of them with those of other workers. It might seem almost unnecessary to allude to these as special virtues, but a perusal of this present number of the *Journal of Anatomy and Physiology* reveals the fact that these very essential details of a paper are in common—and growing—danger of complete neglect. Two papers, contributed by members of Birmingham University, represent contributions towards the developmental history of the ferret. The Birmingham school has devoted a great deal of research towards reconstructing the early stages of the ferret embryo, and as the papers published here are preliminary to further investigations, we may reasonably hope to have the whole of the developmental history of one animal thoroughly worked out. Dr. Thomas Yeates contributes a paper entitled "Studies in the Embryology of the Ferret." The paper, which is an excellently illustrated one, describes the details of a reconstruction of an early embryo cut *in utero*, and many important points concerning the early connexion of the embryo to the uterus are discussed. The mass of detail does not admit of easy summary—indeed, the author himself has not attempted it. Miss Marion Radford contributes the second paper, and she deals with the cranial region of a somewhat older embryo. The features of the brain and pharynx as they are displayed in two models are detailed and discussed. Many points of interest arise in the description, but again they are not summarised. Mr. J. E. S. Frazer deals with the human embryo, and describes the development of the septum of the nose and the maxillary structures in a paper entitled "A Preliminary Communication on the Formation of the Nasal Cavities." Mr. Frazer claims a larger share for the maxillary processes in the formation of the early mouth cavity than is generally admitted, for he has determined that they form the side walls and roof of the cavity as far forward as the olfactory pit, a finding well in accord with the nerve distribution. Many other revisions of the present teaching are introduced into this preliminary contribution. Professor Alexander Meek contributes an important paper on the Morphogenesis of the Head of the Crocodile. From the reconstruction of the heads of crocodile embryos Professor Meek has made a very complete study of the development of the cranial region. The paper is a long one, but is ably summarised, and many of the conclusions arrived at point more clearly to the origin of certain mammalian structures, such as the maxillary and sphenoidal sinuses and the ethmoturbinal region. The results are of obvious importance, and would appear to furnish a new link in the chain of evidence available in the study of mammalian descent. Professor Edward Fawcett continues his studies of the ossification of the human cranium by contributing a paper on the Development of the Human Maxilla, Vomer, and Paraseptal Cartilages. On the whole, the work of Professor Fawcett goes to simplify the teaching of the development of these complicated bones. In pronouncing the maxilla as a membrane bone derived from a single centre, the author confirms the statement made over 50 years ago by Professor Humphry, and thus gives fresh evidence of the remarkably accurate insight of this painstaking anatomist. Concerning the premaxilla but little information is given, the subject being reserved for fuller treatment in a future paper. For the vomer Professor Fawcett finds two centres uniformly present in man—a condition which, though contrary to the assertions of many anatomists, is in harmony with the phylogeny of the bone. A lengthy account of the paraseptal cartilages concludes this exhaustive contribution to the development of the cranium. Mr. Douglas G. Reid continues his Studies of the Intestine and Peritoneum in the Human Fœtus, and Dr. J. Cameron contributes a note on a Venous Anomaly. A paper of a more unusual nature is that of Mr. E. S. Mawe

upon Types of Nuchal Hair and a Possible Theory of the Prediction of Sex. The foundation of this paper is the ancient Japanese belief—and indeed the belief is spread far wider than Japan—that the sex of the next child may be predicted from a study of the arrangement of the hair on the back of the neck of the last child. Mr. Mawe has made some 300 observations, and as a result has determined ten types of nuchal hair patterns, and argued the expectation of sex to be drawn from them. Criticism is easy; but better than criticism will be an extension of the series of observations and the adoption of a strict scientific basis for all the data accumulated. One of those unnoticed points in osteology, of which so many have been discovered recently and so many more remain, has provided the subject of Dr. S. E. Whitnall's paper on a Tubercle on the Malar Bone, and on the Lateral Attachments of the Tarsal Plates. The tubercle, which is on the outer side of the orbital margin, was found to be present in 95 per cent. of 2000 skulls examined, and its importance as a point of attachment for various structures connected with the globe of the eye is amply demonstrated by the author. Another such point, but one previously noted by Dr. W. L. H. Duckworth, is dwelt on by Professor Thomas Dwight in his paper on Irregular Ossifications in the Space between the Transverse Process and the Rib at the Junction of the Neck and Thorax. Professor Robert Thomson describes two brains showing complete unilateral interruption of the fissure of Rolando. Some notes on various anatomical subjects complete the number.

Edinburgh Medical Journal.—Dr. George Williamson contributes to the August number of this magazine some notes on the Workmen's Compensation Act, illustrative of medico-legal points which may arise under this statute. Mr. William Guy, Dr. Alexander Goodall, and Dr. H. S. Reid publish a second instalment of their observations on blood pressure during the administration of anæsthetics, this part dealing with pulse frequency, and also setting forth the conclusions which the authors have reached. They are inclined to attribute such pressor effect as is observed to partial asphyxia, while they note that ethyl chloride causes a disturbance of circulation which may be dangerous. Dr. D. Fraser Harris points out that in the recently published textbook of physiology by Professor Luciani the credit for the discovery of the circulation of the blood is given to Cæsalpinus instead of to Harvey; and a clinical note by Mr. David Wallace calls attention to the possible coexistence of vesical tumour with enlargement of the prostate, and to the necessity for careful examination in cases of the latter affection.

The Medical Chronicle.—In the August number Mr. J. Howson Ray writes on the Surgical Affections of the Hip-joint in Infancy and Childhood, dealing chiefly with tuberculous disease, congenital dislocation (so-called), and conditions of coxa vara and valga. He speaks favourably of the results of Lorenz's method and gives details of his own operative procedure. Dr. R. T. Williamson records a case of Cerebral Tumour affecting the basal ganglia on the left side and both temporo-sphenoidal lobes, and accompanied by flaccid paralysis and changes in the posterior nerve-root fibres.

Dublin Journal of Medical Science.—In the August issue of this journal is published a thesis by Dr. William H. L. MacCarthy on the Early Diagnosis of General Paralysis. The author shows the close simulation of this disease by some forms of alcoholism and enumerates the various laboratory methods available for aid in diagnosis. The use of atropine as a preventive of pulmonary complications following the administration of ether is recommended by Dr. Ernest A. W. Henley, this drug apparently checking the secretion of mucus from the trachea and bronchi. The Clinical Report of the Rotunda Hospital, by Dr. E. Hastings Tweedy and Dr. R. J. Rowlette, is concluded in this issue.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

HALAKONES.

(FRANK A. ROGERS, 327, OXFORD-STREET, LONDON, W.)

HALAKONES seem to us to be very useful for bringing a medicament into contact with the nasal, laryngeal, or bronchial passages; they consist of small conical plugs composed of stiffened gauze. They are easily introduced and retained in the nostril. Amongst the medicaments with which the halakone is charged are menthol, guaiacol, eucalyptus, terebene, and sal alembroth, but perhaps one of the most useful, on account of the good results which it gives in nasal catarrh, is coryfin, which is menthol ethyl glycolate. Its action is more lasting than menthol. The halakone also is calculated to remove organisms from the air intake when inspiration is confined to the nasal passage. Another application of moment is the halakone as a filter of the dust from the air of the dusty road for motorists and cyclists.

CEREGEN FOOD.

(JOHN BELL, HILLS, AND LUCAS, LIMITED, OXFORD WORKS, TOWER BRIDGE-ROAD, LONDON, S.E.)

A decided dietetic advantage of ceregen food is that it contains, according to our analysis, a requisite amount of assimilable protein. There are present also ferments which, when the instructions for preparing the food are carefully followed, serve to help the work of digestion. In our experiments we found that if the food be mixed into a paste with water, and then diluted and kept at body heat for an hour or so, the filtered liquid shows a considerable proportion of soluble protein according to the bromine test. Fat is also present in suitable quantity. In short, the food contains all the elements necessary for complete nutrition. Our analysis gave the following results: moisture, 8·10 per cent.; mineral matter, 5·70 per cent.; protein, 23·81 per cent.; fat, 3·44 per cent.; carbohydrates by difference, 58·95 per cent.; phosphates were present in abundance. The food is pleasant besides nutritious, while its cost is moderate.

MALT EXTRACT WITH IRON IODIDE.

(A. WANDER, LIMITED, 1 AND 3, LEONARD-STREET, CITY-ROAD, LONDON, E.C.)

Malt extract appears to be a good vehicle for administering the useful, but unstable, salt iodide of iron. The malt tends to keep the iron definitely in the ferrous state, while the iodine does not set up iodism when so administered. We had no difficulty in detecting both iron and iodine, and the former was present, as stated, in the ferrous condition unoxidised. Clinical evidence shows some good results of the use of the mixture in tuberculosis and it has also been used in anæmia and rheumatic affections.

JAMESON'S IRISH WHISKY.

(JOHN JAMESON AND SON, LIMITED, BOW-STREET DISTILLERY, DUBLIN.)

It is rarely that we find Irish whisky anything else but an all malt pot-still spirit, and the brand under examination is typical of a thoroughly matured soft-flavoured Irish whisky. We have evidence also of its being a standard product

inasmuch as the analysis of a sample obtained independently on the market gave results which accorded exactly with those given by samples submitted to us direct from the distillery. This is a matter of some importance when the medical practitioner considers it advisable to recommend this kind of stimulant to the patient. The peculiar flavour of Irish whisky is well known, and it is due to the method of manufacture. It is prepared from a mixture of malted barley with unmalted grain, and the malt is not dried over peat. The flavour in the young spirit is unpleasant, and therefore when an Irish whisky is palatable it is a guarantee that it has been matured. Below we give the analyses of two samples of whisky from the above distillery, one obtained upon the market and the other direct from the distillers: 1. Distiller's sample—alcohol by volume, 48·21 per cent.; extractives, 0·07 per cent.; acidity reckoned as acetic acid, 0·012 per cent. The secondary products were as follows, given in parts per 100,000 parts of alcohol present: aldehydes, 20·00; furfural, 8·30 per cent.; and higher alcohols, 208·00. Market sample—alcohol by volume, 47·67 per cent.; extractives, 0·07 per cent.; acidity reckoned as acetic acid, 0·018 per cent. The secondary products in parts per 100,000 parts of alcohol present were as follows: aldehydes, 20·00; furfural, 8·30; and higher alcohols, 208·00. There will thus be seen a very close agreement between the figures of analysis of the samples. The whisky has all the physical signs of maturity; it is peculiarly soft and smooth to the palate, free from acidity and from harsh flavours.

FIREPROOF CLOTH.

(E. H. SELLERS AND SONS, SCARR MILLS, LOCKWOOD, HUDDERSFIELD.)

We have been asked to submit a sample of this cloth to the same fire tests as those described in our report on flannelettes which appeared in THE LANCET, July 15th, 1911. The material came through the ordeal quite satisfactorily and behaved much like ordinary flannel when ignited. The well-known disagreeable smell evolved when animal matters are burned was given off—the smell of burnt feathers. The material is safe, and when it does burn it burns quietly, and the flame is easily extinguished. There is none of the nap or fluff upon it which causes the flame to spread with disastrous rapidity over flannelette. The material gave no ash on ignition, so that it is not fireproofed with fixed mineral salts. The cloth looks like canvas, but is cool, smooth, and silky to the touch. We understand that it has not been used for clothing so far, but there is a suggestion that it might be so used with certain advantages.

HOME-MADE MARMALADE.

(CHARLES SIBLEY, HIGH-STREET, REDBOURN, HERTS.)

There is very little calling for remark in regard to this preserve except that it is evidently made with care and from pure materials. Analysis shows a good state of concentration, the moisture amounting to 23·32 per cent. There were no artificial stiffening substances present. The total sugar amounted to 74·08 per cent. We believe marmalade to be a very suitable addition to the first meal of the day, as undoubtedly it is an agreeable bitter and stomachic.

DENTAL PREPARATIONS.

(THE STRAND CHEMICAL CO., 22, ELY-PLACE, HOLBORN, LONDON, E.C.)

These preparations act satisfactorily for the purpose of keeping the oral cavities and crevices clean. The tooth-powder has for its basis magnesium peroxide which yields nascent oxygen and a residue of antacid magnesia. It is a pleasant and effective powder to use. The aseptic denture cleanser is similarly useful for keeping the dental plate scientifically clean; it has burnishing properties and does not scratch. Formizin Waldo is an agreeable concentrated mouth-wash containing well-known antiseptic deodorant and soothing agents. It leaves a pleasant sense of cleanliness in the mouth. We have confirmed by analysis the presence of several constituents which substantiate the claims made in regard to its suitability for keeping the mouth in a cleanly state.

ME-MALTO WINE.

(H. G. KINGHAM AND COMPANY, 96, HIGH-STREET, DORKING, SURREY.)

We agree in regard to the claim made in favour of this preparation that it is purely and simply a combination of genuine port (Alto Douro) with Liebig's beef extract and malt extract. Our analysis gave the following results: alcohol, by volume, 21·79 per cent.; extractives, 15·42 per cent.; mineral matter, 0·33 per cent.; and protein, calculated upon 0·07 per cent. of nitrogen, 0·44 per cent. The presence of nutritive protein was shown by the bromine test. The mineral matter consisted chiefly of phosphates. This analysis compares favourably with that of a sample obtained independently, the results being as follows: alcohol, by volume, 23·10 per cent.; extractives, 14·46 per cent.; and mineral matter, 0·30 per cent. This second sample again showed protein. Both samples possessed the real flavour of a genuine port with a suggestion of meat and malt extract. The physician will know what cases he considers such a preparation may be suitable for.

(1) MILK FOOD; AND (2) HEALTH DIET.

(JOSIAH R. NEAVE AND CO., FORDINGBRIDGE, HAMPSHIRE.)

1. "Milk food" is entitled to the description, inasmuch as it has a composition closely resembling that of dried human milk. Our analysis gave the following results: moisture, 4·80 per cent.; mineral matter, 3·50 per cent.; milk sugar, 42·55 per cent.; protein, 22·75 per cent.; and fat, 26·40 per cent. The food is thus well balanced from the dietetic point of view, containing all classes of reparative material. 2. The "health diet" differs from the previous food, in that it contains in addition to protein and fat and milk sugar, a proportion of starch. Analysis gave the following results: moisture, 4·10 per cent.; mineral matter, 2·90 per cent.; protein, 22·93 per cent.; fat, 19·40 per cent.; milk sugar, 21·18 per cent.; and starch, 29·49 per cent. The former food is adapted for infant and the latter for invalid requirements.

VIN DE GRAVES.

(HATCH, MANSFIELD, AND CO., 47, PALL MALL, LONDON, W.)

This is a typical clean non-acid wine from the Graves district; it contains a minimum of alcohol as will be seen from the following analysis: alcohol, by volume, 11·61 per cent.; total extractives, 2·20 per cent.; mineral matter, 0·19 per cent.; volatile acidity, reckoned as acetic acid, 0·21 per cent.; fixed acidity, reckoned as tartaric acid, 0·52 per cent.; and sugar, 0·46 per cent. There is a minimum again of sugar and acid. The wine, which was in sound condition when it reached us, possesses an agreeably delicate flavour. As is the case with most genuine sauternes, it contains traces of sulphur dioxide due to the burning of a little sulphur in the cask. As long as this treatment is not excessive good is more likely to result than harm by its adoption.

LITERARY INTELLIGENCE.—Mr. Albert Carless has passed for the press the eighth edition of the "Manual of Surgery," by himself and the late Mr. William Rose, which Messrs. Baillière, Tindall, and Cox announce for immediate publication. The new edition will include numerous coloured plates, in the preparation of which Mr. Carless has been assisted by Dr. W. d'Este Emery. Many of the older illustrations have been redrawn, and the entire work has been revised. A second edition of the English translation of Professor Dieulafoy's "Manuel de Pathologie Interne" is announced by the same firm.

ROYAL INSTITUTE OF PUBLIC HEALTH: ANNUAL CONGRESS.

(FROM A SPECIAL CORRESPONDENT.)

THE annual Congress of the Royal Institute of Public Health was held in Dublin from August 15th to 21st, under the presidency of Her Excellency the Countess of Aberdeen. On two previous occasions—in 1892 and 1898—the institute had met in Dublin, under the presidency of Sir Charles Cameron. The work of the Congress on the present occasion was divided into eight sections—viz., Preventive Medicine, Chemistry and Bacteriology, Child Study and Eugenics, Comparative Pathology and Veterinary Hygiene, Engineering and Architecture, Housing of the Working Classes and Town Planning, Municipal and Parliamentary, and Vital Statistics. There were, in addition, conferences of medical officers of health and port sanitary officers, and of sanitary inspectors. The meetings were all held in Trinity College, the rooms being kindly lent by the Provost and senior Fellows.

The Housing Question.

Out of the large number of subjects discussed two attracted special attention—the housing question and school hygiene. As there was a special section to deal with the housing question one would have expected to find the discussions on the subject confined to that section, but there was, however, constant overlapping, and the same subject was discussed before small audiences in two, three, or four sections. Three sectional Presidents chose the housing problem in Dublin as the subject of their presidential addresses, and a paper on the same subject was read in at least one other section.

A paper by Dr. J. WRIGHT MASON of Hull, entitled "The Housing Problem in Industrial Centres and the New Housing Acts," was perhaps the most important contribution in the Housing Section. He compared the rates of mortality in cottage dwellings with those in large blocks and argued strongly in favour of the cottage system as preferable in every way.

Sir LAMBERT ORMSBY recounted the history of a successful experiment on a small scale in Dublin for the housing of the very poor.

Mr. C. J. MCCARTHY, the city architect of Dublin, showed the magnitude of the problem which has to be faced in Dublin. The Dublin Artisans' Dwellings Company had erected 3600 well-planned dwellings, while the corporation had provided 1330 dwellings. Nevertheless, it would be understood that while they had still some 21,000 families occupying single-room tenements the housing problem was very far indeed from having been solved. As to the direction in which a solution might be found, he thought that instead of attempting to provide working-class dwellings on the outskirts of the city and bringing the people in to their work they would have to acquire and clear large central slum areas. Portion of these would, he hoped, be converted into open spaces, playing grounds, and gardens, and on the other portions would be erected dwellings suitable to the requirements of the working population. They must abandon the idea that any really great and comprehensive reform of the housing of the people could be made remunerative in the ordinary sense of the word. The chief return for which they must look would be found in the improved health of the city and the increased efficiency of the workers.

School Hygiene.

On the subject of school hygiene the most important contribution was that of Mr. W. J. M. STARKIE, the Resident Commissioner of National Education in Ireland. He dealt with the question of dental inspection of school children in Ireland. He learned from the teachers that practically all the older children were as regards their teeth in a desperate condition. With regard to school buildings he said that there were hundreds of school buildings which for sheer horror could not be equalled in any part of Europe. He referred to photographs of two in Donegal and said in his opinion children would be far better off if they remained at home without education than cooped up in such huts for four or five hours a day. If many of the schoolhouses were permitted to be hotbeds of disease it seemed hopeless to expect the State to make any provision for the care of the teeth. And yet he ventured to say that the health of the young should be the first interest of the public.

Mr. GEORGE FLETCHER, of the Department of Agriculture and Technical Instruction, urged the necessity of medical inspection of school children in Ireland. The medical inspection of schools—which should be accompanied by an anthropometric survey—was a pressing need. From a national standpoint, however, it was not at bottom a question of expenditure, but a question of bookkeeping. It was better to pay for the prevention of an evil than for its cure. The State, rightly or wrongly, had made itself responsible for the school education of its youth. Much of the money expended on education was wasted owing to the physical unfitness of the scholars. This could in a large measure be remedied by medical inspection, and the vigour of the nation improved at the same time. The question was not one for educational administrators alone. It was a matter in which the education of public opinion and the cultivation of a "hygienic conscience" were prime essentials.

Dr. E. MAGENNIS read a paper on "Visual Impediments to Learning," and Surgeon-Colonel D. E. FLINN and others pressed for the establishment of day industrial schools.

Water Supplies.

Dr. A. C. HOUSTON (of the Metropolitan Water Board) discussed various problems concerned with water-supplies. He spoke of the process by which stored water purified itself from bacterial contamination, and thought storage more important than filtration. He suggested that they had been over-estimating the dangerous qualities of unfiltered water as a constant factor, and under-estimating the necessity of shutting the door against the possibility of accident, and also placing an altogether delusive value on the effect of sand-filtration alone. He believed that in the future they would consider it unnecessary still further to perfect filtration processes when dealing with "stored" waters, that they would have less dread of the evil qualities of unfiltered water as a constant menace, and that the main endeavour would be to guard against the possibility of accident, either before, during, or subsequent to, the filtration process, and so to deal with unfiltered water—e.g., by storage—as practically to nullify the effects of any sudden gross specific infection.

Other Papers.—Social Events.

Dr. E. J. MCWEENEY read a paper dealing with the Rôle of Carriers in the Propagation of Disease, and another on Meat Poisoning.

In the section of Vital Statistics two papers of special interest were read, one, by Sir W. J. THOMPSON, Registrar-General, President of the section, on Vital Statistics of Ireland from 1864 to the Present, and the other by Mr. D. A. CHART, on Public Health of Ireland from 1801 to 1911. Sir William Thompson showed that the death-rate from practically all the principal epidemic diseases had steadily fallen. The tuberculosis rate had altered little until within the past few years, when there was a slight fall. Influenza and cancer showed an upward tendency. In a general summary he stated that (1) emigration had enormously decreased; (2) the birth-rate, notwithstanding emigration and a decreasing population, had remained almost stationary; (3) the marriage rate had increased of late years; (4) the death-rate, after many fluctuations, was decreasing. Moreover, (*a*) the number of inhabited houses in Ireland had increased; (*b*) the number of houses being built had also increased; (*c*) the number of families had increased; (*d*) the number of uninhabited houses had decreased.

In addition to the sectional meetings there were, of course, many pleasant social events. There was all the more time for these as the sections adjourned each day at lunch-time. The afternoons and evenings were spent in garden parties, receptions, dinners, and visits to places of interest.

Faults in the organisation of the Congress gave rise to a good deal of grumbling. The overlapping of the work of the sections, already mentioned, robbed many of the discussions of their interest and influence. The official "Programme and Guide" gave no help to a member wishing to know where and when a particular paper was to be read. Except in one section, that of Comparative Pathology, no time-table was issued. A member therefore had to take his chance of finding something of interest going on in whatever section he happened to visit. In future meetings the time given to the Congress might well be shortened, the number of sections might be diminished, and their working hours lengthened.

New Inventions.

AN OXYGEN-DRIVEN CHLOROFORM INHALER.

THIS apparatus (Fig. 1), on the principle of the Junker chloroform inhaler, is designed to simplify the simultaneous administration of oxygen and chloroform. A short cannula (Fig. 2) at the extremity of the bellows system plugs into the tube leading from the oxygen cylinder. The bellows consists of two bulbs, each of the capacity of 100 c.c.; the first bulb is provided with an inlet valve. The chloroform chamber is fitted with oxygen inlet and chloroform vapour outlet tubes (Figs. 3 and 4). These tubes are connected outside the chamber by a short-circuit tube controlled by a simple tap. By closing this tap the current of oxygen no longer passes through the chloroform in the chamber, but is delivered through the short circuit directly to the face-piece free from chloroform vapour.

FIG. 1.

Oxygen-chloroform inhaler, consisting of a bellows system free at one end for attachment to the oxygen cylinder, and attached to the chloroform bottle, from which an outlet tube leads to the face mask. The inlet and outlet tubes can be short-circuited by a curved connecting tube, which is opened and closed by a stopcock.

To use the inhaler the cannula is plugged into the oxygen cylinder tubing and a feeble current is allowed to enter the chloroform chamber. The current required to maintain anæsthesia corresponds to between 0·5–1·0 litre per minute. The current passing is measured by compressing the bulb, allowing it to fill, compressing again, and noting how often per minute the bulb is filled. As the capacity of the bulb is 100 c.c. five fillings per minute correspond to a current of 0·5 litre, ten fillings to a current of 1·0 litre, and so on. The average patient requires a current of 0·75 litre per minute (7–8 fillings). At any moment the chloroform vapour may be instantaneously cut off and pure oxygen supplied to the patient by turning the short-circuit tap. The percentage of chloroform in the mixture delivered is very low; about 3·5 c.c. (1 drachm) of chloroform is volatilised every quarter of an hour with the average 0·75 litre oxygen current. It has not been found necessary to interpose an oxygen reservoir bag in the system—there is already a triple expansion series—viz., two bulbs and the chloroform chamber—and no appreciable chilling of the oxygen-chloroform mixture occurs. In default of oxygen the apparatus may be used as an ordinary air-bellows inhaler by disconnecting the cannula from the oxygen cylinder tubing.

FIG. 2.

The cannula for mouth administration.

The apparatus is carefully constructed by Messrs. Mayer and Meltzer, 71, Great Portland-street, W.

FIG. 3.

The attachment to the chloroform bottle, showing the stopcock open, so that the stream of oxygen passes down the tube into the chloroform bottle, whence the emerging stream to the face-mask consists of oxygen plus chloroform.

FIG. 4.

The same as Fig. 3, but with the stopcock closed, showing how the oxygen stream, instead of passing through the chloroform bottle, goes directly through the short-circuit tube to the face-mask, thus delivering pure oxygen without the admixture of chloroform.

R. M. ROWE, M.A., M.D., Ch.B. Edin., M.R.C.S. Eng., L.R.C.P. Lond.,
Anæsthetist, Throat Hospital, Golden-square, W.; late Anæsthetist, Male Lock Hospital, W.

UNIVERSITY OF ST. ANDREWS.—We learn that the Senatus Academicus of the University of St. Andrews has resolved to confer the honorary degree of LL.D. upon the following members of the medical profession, in this country and abroad, at the celebration in September of the 500th anniversary of the foundation of the University:—Professor Sir T. Clifford Allbutt, Cambridge University; Sir Thomas Barlow, President of the Royal College of Physicians of London; Mr. G. A. Berry, honorary surgeon oculist to the King in Scotland; Dr. Byrom Bramwell, President of the Royal College of Physicians of Edinburgh; Dr. Robert Bridges; Dr. Alexander Crum Brown; Professor Sir Hector Cameron, University of Glasgow; Professor Francis Gotch, University of Oxford; Professor Peter Fredrik Holst, Royal Frederick University of Christiania; Professor Hector Leboucq, University of Ghent; Professor C. S. Minot, of Harvard; Professor R. A. Reddingius, University of Groningen; Professor Robert Saundby, President of the British Medical Association; Professor E. A. Schäfer, University of Edinburgh; Professor W. W. Keen of Philadelphia; Lieutenant-Colonel David Prain, Director of the Royal Botanic Gardens, Kew; Dr. Anthony Traill, Provost of Trinity College, Dublin; and Professor Johann Veit, University of Halle.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 2, 1911.

Energy and Elemental Instability.

THE presidential address delivered by Sir WILLIAM RAMSAY before the meeting of the British Association for the Advancement of Science at Portsmouth was a novelty in its distinguished position, for it was discursive. It was not confined to presenting a summary of the progress of science within the past year, nor was it devoted entirely to a given aspect of science in which the President himself had been engaged. Sir WILLIAM RAMSAY delivered an address which was generally retrospective, seeking to picture the present position of civilised nations politically, scientifically, socially, educationally, industrially, imperially, in contrast with periods of the past. In an audience necessarily cosmopolitan in its scientific tastes the address presented something of interest to everybody; while he kept his discussion of the various subjects well within the capacity of his listeners, bearing in mind that the British Association of Science opens its ranks not merely to those following different branches of science, but also to many who, though interested in the problems of science, are not engaged in actual scientific pursuits. His address, in fact, carried out his view that the greatest benefit accruing from meetings of the kind is the opportunity for intercourse. The object of the association was declared 80 years ago at its first meeting in York to be: "To give a stronger impulse and a more systematic direction to scientific inquiry, to promote the intercourse of those who cultivate science in different parts of the British Empire with one another and with foreign philosophers, to obtain a more general attention to the objects of science and a removal of any disadvantages of a public kind which impede its progress." As a mighty contributor to this progress, whose arduous researches have thrown strong light upon the constitution of matter, Sir WILLIAM RAMSAY was well qualified for the presidential post of the association.

Whilst we perceive the value of the suggestive incursions which Sir WILLIAM RAMSAY made into regions not practically explored by himself, we regard as the most remarkable passages in his address those in which he referred to the position of the elements of radium and the wonderful manifestations of its energy. He gave only a few minutes to the consideration of ancient and modern views regarding the chemical elements, and yet in those minutes he was able to announce that for the first time we have accurate knowledge as to the descent of some of the elements. This was a recognition that our ideas as to the definition of an element have been seriously disturbed. From its physical and chemical properties radium is an undoubted element, but, as Sir WILLIAM RAMSAY observed, it is a very curious one, for it is unstable, and hitherto stability has been believed to be the essential characteristic of an element. Radium, however, disintegrates—changes, that is to say, into other bodies, and at a constant rate. If one gramme is kept for 1760 years only half a gramme will be left at the end of that time; half of it will have given off other products. It yields a condensable gas—radium emanation—and besides evolves helium. Helium seems to be a veritable element, and radium emanation has been shown to be incapable of chemical union, but it has been liquefied and solidified in the laboratory of University College, London, and its spectrum has been measured and its density determined. The emanation has been called niton to recall its connexion with its congeners, argon, neon, krypton, xenon, helium, and its phosphorescent properties. The atomic weight of niton is 222·4 and that of helium 4. The sum 226·4 is the atomic weight of the parent radium. But the descent does not stop there. Niton in its turn gives radium A and helium, radium A rapidly gives another solid substance radium B, helium again accompanying the change. Soon a half of B gives place to radium C, but in this case no helium is evolved, only atoms of electricity to which the name "electrons" has been given by Dr. JOHNSTONE STONEY. Radium C has a short life, for it changes into radium C^2, parting with helium atoms. In two and a half minutes, however, radium C^2 is half gone, parting once again with electrons and forming radium D, which is longer lived, its disappearance eventuating in radium E with apparently no discharge of electrons or helium. Radium E changes spontaneously into radium F, which is the substance to which Madame CURIE gave the name "polonium." In 140 days, however, polonium in its turn is half changed into an unknown metal, supposed to be possibly lead. Then apparently a check to the rapid descent takes place, for lead within present human limitations, at any rate, is stable. But there is no reason why even the stable elements should not decompose when subjected to enormous strains. The virtue of the energy of radium consists, as Sir WILLIAM RAMSAY pointed out, in the small weight in which it is contained; energy here is in an enormously concentrated form. It is disappointing to be told, therefore, that the supply is a very limited one, and that it can safely be affirmed that the production will never surpass half an ounce in any year. The small quantities, however, which have been so far produced have afforded sufficient energy to induce the degradation of elements hitherto regarded as stable. The action of niton or radium emanation on salts of copper appears to show that the metal copper can be converted partially into lithium; and similar experiments indicate that thorium, zirconium, titanium, and silicon are degraded into carbon, for solutions of compounds of these, mixed with niton, invariably generate carbon dioxide, while cerium, silver, mercury, and some other metals give none. This is all a very wonderful story, and we may well ponder over the possibilities for the human race to which these discoveries are leading. Sir WILLIAM RAMSAY suggests that if elements are capable of disintegration the world will have at its disposal a hitherto unsuspected source of energy. If radium were to evolve its stored-up energy at the same rate that gun-cotton does we should have an undreamt-of explosive; could we control the rate, we should have a useful and

potent source of energy, provided always that a supply of radium were forthcoming. "If, however, the elements which we have been used to consider as permanent are capable of changing with evolution of energy; if some form of catalyser could be discovered which would usefully increase their almost inconceivably slow rate of change, then it is not too much to say that the whole future of our race would be altered;" that is how Sir WILLIAM RAMSAY pithily sums up the position.

There is truth in his words, for the whole progress of the human race has been due to enterprising philosophers, speculators, and workers who have discovered means of concentrating energy and of transforming one form of it into another. As discovery upon discovery is made by which any one power is utilised to control the great natural forces the consequent achievements will have far-reaching eventualities for humanity. We may well ask, then, is the future to depend upon a mighty catalyser, suggested by the energies of radium; are man's attempts to secure for his use the natural forces to be for ever unavailing? What of the tides, the internal heat of the earth, the winds, and solar heat? The answer from scientific men and men of the great engineering profession is disappointing. In this country, at least, we are told that it would be impracticable to attempt to utilise terrestrial heat from boreholes, while from the tides and the winds small supplies of energy are obtainable, but negligible in comparison with that derived from the combustion of coal. Again, nothing is to be hoped for from the direct utilisation of solar heat in this temperate and uncertain climate, while it appears improbable that we shall ever be able to utilise the energy due to the revolution of the earth on her axis, or to her proper motion round the sun. One lesson of all this is that we must make the most of our coal—a diminishing quantity in all the civilised parts of the earth—for our supply of energy, and for the means of supporting our population. Sir WILLIAM RAMSAY, in inculcating this lesson, does not appear to regard the possibilities of liquid fuel; otherwise his wise words cover all the ground. Waste must be penalised. Smoke, as an evidence of it, must be abolished even although it proceeds from the domestic hearth; energy must be transmitted by cheap channels from its sources and not manufactured from the raw material at a million tiny local centres where the conditions are sure to be clumsy, beyond control, unhygienic, and wasteful. Electricity seems to be the way out, for, to quote Sir WILLIAM RAMSAY'S words, an invention which would enable us to convert the energy of coal directly into electrical energy would revolutionise our ideas and methods.

The discovery of radium and similar radio-active substances has widened the bounds of thought, as Sir WILLIAM RAMSAY fittingly points out in a concluding appeal for the study of pure science apart from its applications. While these radio-active substances are in all probability incapable of industrial application, save in the domain of medicine, their study has shown us to what enormous advances in the concentration of energy it is permissible to look forward with the hope of applying the knowledge thereby gained to the betterment of the whole human race.

The Provision of Meals for School Children.

THE working of the Education (Provision of Meals) Act, 1906, for the year ending March 31st, 1910, forms the subject of a Parliamentary Report, from which we learn that on the date named the total number of local education authorities in existence was 327. From 128 of these, in whose areas "school canteen committees" have been formed, the Board of Education has received full replies to a circular inquiring into the working of the Act in respect of the following points: The character and composition of the committee; the method of recommendation or selection of the children for meals; the total number of children fed, with the periods during which they received meals; the number of meals provided, with the place and dietary; the method of serving and the behaviour of the children; and the cost to the rates, with a statement of additional sources of income—e.g., voluntary contributions and money contributed by, or recovered from, parents; the average estimated cost of each meal; the charges fixed as recoverable; the number of children whose meals were wholly or in part paid for by their parents, and the number withdrawn owing to unwillingness of the parents to pay; and the amount which a $\frac{1}{2}d.$ rate would have produced for the period under review. It has not been considered necessary to put the Act into force in 198 of these areas, in many cases voluntary organisations proving sufficient.

From the report it appears that during the year 1910 the total expenditure of the local education authorities was £134,105, distributed as follows: (1) For food, under Section 3 of Act, £81,728; (2) other expenditures, under Section 3, £43,644; (3) estimated share of office expenses and salaries chargeable to work under Act, £8733. The expenditure of the canteen committees was met from funds as follows: Rates for expenditures (1) and (2) above, £125,372; voluntary contributions, £9813; contributed or recovered from parents (including £225 paid by Poor-law guardians), £906; total £136,091. The total figures for 1908–09 were, expenditure, £72,333; sources of income, £85,690. The increase in 1909–10 is mainly attributable to London, and is largely due to the fact that the London County Council expenditure in 1909–10 is for 12 months, whereas in the previous year it did not begin until within three months of the end of the year, so that the returns for that year covered only three months. The total number of meals provided was as follows: In 1908–09: London, 4,546,771; elsewhere, 9,671,789. In 1909–10: London, 7,335,469; elsewhere, 8,766,635. As some authorities, including the London County Council, have made no returns of the number of children for whom meals were provided, the average estimate of meals for each child can be calculated on a portion only, excluding those areas from which details are not available. This calculation gives a total of 63·8 per child. The authorities which provided meals for the largest number of children were as follows: Birmingham, 9678; Manchester, 7421; Newcastle, 6888; Leeds, 6867; Sheffield, 5331; Bristol, 5240; Bradford, 4406. London and Sunderland made no return of children; but, as regards the largest number of meals provided, the

figures are: London, 7,335,469; Bradford, 957,739; Birmingham, 575,036; Sunderland, 509,402. The sums recoverable by the authorities from parents were about as last year—viz., from ½*d.* to 3*d.*, while there was little change in the amounts so recovered. In other respects the returns show comparatively little change from those forming the basis of the earlier report.

From the public point of view, as well as from that of our readers, the most interesting thing in the report is that the Board of Education lays stress on the intimate connexion of the provision of meals with medical inspection. Unless the provision of meals is coördinated with the work of the school medical officer as a branch of the school medical service it may degenerate into a system of doles, administered in a haphazard fashion on merely eleemosynary and sentimental lines. It is only thus that, in the opinion of the Board, wasteful and reckless expenditure can be prevented, and full value in increased vigour and more effective education can be obtained for the expenditure. Even when the large scale of the operations under the Act makes it impracticable for the medical officer to examine all children recommended for meals, he can at least take a large part in the selection of children, and by concentrating attention on doubtful cases, or those in which actual neglect is suspected, can help in the establishment of a proper standard. By visiting kitchens and dining centres from time to time, also, he can advise in the choice of food and test the results of different dietaries; thus he can see that special attention is given to the more delicate children, and will have an opportunity of judging the extent to which individual children are benefited by the meals. Discovery of the main causes of malnutrition will suggest a remedy, and an important part of the "following-up" system of treatment will be supplied. As to machinery for selecting those to be fed, in 70 cases the school medical officer, and in 39 the school nurses, made the recommendations. Further light on this subject can be discovered in the medical officers' reports of Dec. 31st, 1910. The excellent work of Dr. D. FORBES, school medical officer of Brighton, is quoted. In that town all children for whom an application for meals was made, amounting in 1910 to 1633, were weighed and measured and in special cases they were thoroughly examined. Of this number those recommended for meals on account of deficient physique, deficient weight in relation to height, tuberculosis or anæmia, amounted to 45 per cent. of the boys and 42 per cent. of the girls. Other medical officers whose commendable work is cited are Dr. C. F. STOVIN of Ilford, Mr. G. FOGGIN of Newcastle-on-Tyne, Dr. C. MURRAY of Preston, and Dr. RALPH P. WILLIAMS of Sheffield. From a series of comparative tests the last-named officer speaks highly of the great superiority of the porridge breakfast. As regards the opportunity afforded by the provision of meals for the inculcation of lessons in cleanliness, courtesy, and good behaviour, it is apparent, the report says, that little attention has been paid to these things. Dirty and ragged tablecloths, unnecessary noise, deficient efforts to teach orderly eating, and even actual disorderly conduct, bolting of food, rudeness, and improper use of the utensils, are commented on, though great excuse is admitted by the Board, because with limited attendants the mere serving of the food leaves but little leisure for exerting a humanising influence. In many cases, too, those in attendance can hardly be considered capable of giving lessons in deportment, as is obvious when we read that in one instance "nine charwomen of a rather low type attend to 470 children." Contrary instances are, however, referred to, in which much better conditions prevailed as regards not only the serving of the food, but the discipline, manners, and cleanliness of the children. The report points, as the reason for citing these adverse instances, to the fact that "it is more useful, though less pleasant, to supply warnings than models." The results from a medical point of view will find a place in the reports of the school medical officers.

The Risk of Plague at Home.

THE reports[1] and papers on suspected cases of human plague in East Suffolk and on the epizootic of plague which certainly attacked rodents in that district during last autumn and winter will possess the deepest interest for all epidemiologists, and they may have historical value subsequently, for what the more or less immediate future may have in store, both as regards rodent and human plague, cannot be prophesied. Many of the points dealt with in these papers are already common knowledge owing to the interest which the occurrence excited at the time, but the facts are now for the first time set out fully and in a manner which reflects credit upon the Medical Department of the Local Government Board. The epidemiological and administrative sides of the outbreak are dealt with by the late Dr. H. T. BULSTRODE with the clearness and thoroughness that might be expected from that greatly lamented sanitarian; while the flea fauna of the rats and rabbits, together with the species of the rats found, are reported upon by Dr. C. J. MARTIN and Mr. SYDNEY ROWLAND of the Lister Institute. The pathological and bacteriological side of the epizootic was undertaken for the Local Government Board by Dr. G. F. PETRIE and Dr. G. H. K. MACALISTER, also of the Lister Institute. Dr. A. NEWSHOLME, medical officer of the Board, presents the papers to Mr. BURNS with some introductory remarks. There are some excellent maps showing the distribution of the human and rat cases of plague, which render it easy to follow the narrative.

The first thing which strikes the reader on looking at the map accompanying Dr. BULSTRODE'S general report is the relatively extensive area over which the suspected human cases were observed between 1906–07 and 1910. But these cases are divisible into three or, at most, four separate groups; two of probable pneumonic plague and one of probable bubonic and septicæmic plague. There is, too, the very instructive circumstance that rats dead of plague were actually found on both sides of the estuary of the Orwell, not far from the localities in which the suspected human cases occurred. Clearly, as Dr. BULSTRODE points out, rat plague had probably been prevalent in some degree in this neighbourhood from 1907, and perhaps earlier, and it is a matter of great interest

[1] Reports to the Local Government Board on Public Health and Medical Subjects. New Series, No. 52. Published by His Majesty's Stationery Office. Sold by Wyman and Sons, Limited, Fetter-lane, E.C., or purchased through any bookseller. London. 1911. Price 1s. 3d.

to note that, notwithstanding this widely prevalent epizootic, there were only from 1906 onwards three or, at most, four primary cases of human plague, the remainder being secondary cases. This relative immunity is probably in large measure to be accounted for by the different habits of the brown and the black rat, and by the circumstance that not one example of Pulex cheopis (to use the familiar name), the flea of the black rat, was discovered. Moreover, as Dr. MARTIN and Mr. ROWLAND show in their instructive contribution to the volume, 50 per cent. of the rat-flea population consisted of a flea which apparently bites man but rarely. The remainder of the rat-flea population was composed of Ceratophyllus fasciatus, which bites man not very readily—not nearly so readily as does the rat-flea of India. There is, therefore, left only about one man-biting rat-flea to every two rats, a flea prevalence which, according to the work of the Indian Plague Commission, is too small to give rise to a human epidemic in India. As to the future, Dr. BULSTRODE insists that the absence of further cases of human plague does not justify the belief that danger has passed and that precautions can be relaxed. On the contrary, he considers that the history of plague both in this and other countries should suffice to show the peril of such a policy. But with reference to comparisons which have been made by some writers between the Plague of London and the behaviour of the disease at the present time he points to the different conditions, both zoological and social, which now prevail. During both the Black Death and the Plague of London the black rat (Mus rattus) was presumably the dominant rodent, the brown rat (Mus decumanus) not having reached this country until about the year 1728—i.e., several years after the disappearance of human plague from the British Isles. As regards the social conditions, attention is drawn to the practice which obtained at the time of the Plague of London of shutting up the sick with the healthy, a procedure which was calculated to facilitate intercourse between rats and man and between man and man. It seems, too, that in the fourteenth and seventeenth centuries the disease not infrequently attacked several persons in the same house, whereas at the present time in India, where the bubonic type almost exclusively prevails, multiple cases in the same house are extremely rare. This difference of behaviour seems to suggest, Dr. BULSTRODE observes, material variation in methods of spread, and, inferentially, in the type of disease which may prevail at different times. It raises question, in fact, as to the proportion of pneumonic, and perhaps also septicæmic, cases in relation to the purely bubonic in the fourteenth and seventeenth centuries. In Dr. BULSTRODE'S view a study of plague literature points to the conclusion that the pneumonic type played a more important part in the diffusion of plague in past epidemics than is generally believed. It is, for example, difficult to account for the behaviour of the famous Eyam outbreak in 1665–66, on the assumption that the disease was exclusively bubonic plague, since there were apparently some 259 cases in 76 families, a house incidence which suggests considerable case-to-case infectivity.

In the report the detailed account is given of the mysterious outbreak which occurred on the banks of the Orwell in the winter of 1909 to 1910, and which involved eight persons with five deaths. This outbreak, or rather series of cases, occasioned great excitement at the time of its occurrence, and resulted in two post-mortem examinations and three inquests, there having been, it seems, some suspicion of poisoning. But this suspicion is certainly dispelled by the searching examination to which Dr. BULSTRODE subjects the evidence, and it is clear that a communicable malady, having the incubation period and many of the signs and symptoms of plague, was in question. Whether this was actually an outbreak of bubonic and septicæmic plague cannot at this date be definitely determined, but there are many epidemiologists who will agree with Dr. BULSTRODE that the outbreak is best explained upon the theory that the disease was plague. That theory alone appears to fit all the ascertained facts. The paper furnished by Dr. PETRIE and Dr. MACALISTER upon the pathological and bacteriological examinations of rats collected outside the first invaded area is highly instructive, and brings out the difficulties experienced in endeavouring to interpret the pathological, microscopical, cultural, and staining manifestations which were encountered. Those difficulties were numerous. Of the 6071 rats examined 60 were retained for further examination. Of these, 15 evinced suspicious glandular conditions, and 45 showed glandular changes in the liver and spleen. But ultimately only three rats remained over from which growths strongly resembling B. pestis were obtained. Subsequently, however, it was determined that these conformed to a pseudo-tuberculous type. In addition to the three papers referred to, the volume contains the circulars and Orders of the Local Government Board and its medical officers, as well as extracts from the report of Mr. H. LLEWELLYN HEATH, the county medical officer of health. The whole work is of permanent value. It will be of great use to all medical officers of health for reference purposes, and in the event of further trouble arising will constitute an authoritative study of the precedent conditions.

Annotations.

"Ne quid nimis."

THE PSYCHOLOGY OF KLEPTOMANIA.

DURING the season of big sales in shops, when crowds are attracted by what they believe to be bargain prices, cases of theft are frequent; and no one who has followed the newspaper accounts of these occurrences can fail to see that while some instances fall into the category of ordinary dishonesty some present very puzzling features, so motiveless is the criminal act. Some years ago in his interesting work, "Les Obsessions et la Psychasthénie," M. Pierre Janet suggested an ingenious explanation of the mode in which impulsive acts may arise in conditions of mental depression. According to this theory, which was more fully developed by the author in an article in the *Journal of Abnormal Psychology* for April, 1906, on the Pathogenesis of Certain Impulsions, the reason why the psychasthenic patient is prone to impulsive action of a more or less dangerous character is that he finds in such action a momentary stimulus which raises his emotional tone and relieves for a time his painful sense of incompleteness and inadequacy to the environment. In the issue of the *Journal*

de Psychologie Normale et Pathologique for March–April of this year, M. Janet published an observation of kleptomania which so exactly fulfils the conditions of his hypothesis that it amounts almost to a demonstration of its validity. The patient, a woman of good social position, had an attack of mental depression in 1904 when she was in her fiftieth year. The symptoms were of the usual character: on the mental side, loss of interest in everything, insomnia, abulia, feelings of "a veil around the head," "a layer of cotton on the brain," and so forth; and on the physical side, anorexia, furred tongue, fœtid breath, and very obstinate constipation. After lasting for some ten months this condition passed off gradually, and the patient continued well until five years later when she had another attack characterised by exactly the same symptoms, physical and mental, and lasting for eight months. In February, 1910, six months after her recovery, the same train of symptoms reappeared. But on this occasion, when the attack had followed its regular course for a few weeks, it came suddenly to an end; the depression and inertia, as well as the physical disorders, vanished, giving place to a condition of apparent health. In October of the same year the patient, to the amazement of her friends, was detected in the act of stealing some petty articles in one of the large Paris shops. When her rooms were examined they were found to contain the kleptomaniac's usual accumulation of useless and heterogeneous objects, many of them with the sale labels still attached to them. It was ascertained that the thefts dated back to the month of February, and the patient on being questioned stated that in that month she had gone to a shop with a friend who, wishing to rouse her from her depressed condition, urged her to make some purchases. Yielding to her companion's insistence, she selected some trivial object but could not attract the attention of the shopman. As she stood with the article in her hand she suddenly thought how easily she might be taken for a thief, and this momentary alarm then gave place to a delicious sense of danger which seemed to brace and stimulate her. She made her way out of the shop, and for some days felt quite restored to her normal state. Then the depression returned, and she had recourse to the same mode of excitement, and all through the summer she continued stealing as a means of keeping off the threatening attack. She had no sense of shame or remorse, but in deference to her friends she promised not to offend in this way again. She kept her word, and in a short time she recovered normal ethical feeling and was able to recognise the immorality of her conduct; the kleptomaniac impulse disappeared, but at the same time the loss of energy and the mental depression returned, together with the constipation and the other physical symptoms. This mode of genesis of the morbid impulse from the need of excitement in conditions of psychasthenia, which appears so clearly in M. Janet's interesting observation, may frequently be traced in other cases of pathological crime, and notably in many instances of indecent exposure.

THE CLASSIFICATION OF THE BLIND.

THE authorities responsible for the Census schedules of 1911 have made a regrettable slip which seriously detracts from the utility of the statistics. Instead of employing the term "blind" as heretofore without qualification, this year the description "totally blind" is employed. It is, indeed, doubtful whether any harm has been done, because the unqualified term "blind" must have been ambiguous in former years, some regarding it as meaning totally blind and others as blind for all practical purposes, though possessing perception of light or a very low grade of visual acuity. It is certain, however, that the opportunity for distinguishing between those who possess no vision or such defective vision that for purposes of education and wage-earning capacity they must submit to the conditions and lead the life of the totally blind, and those who possess useful, though still seriously defective, vision, such as might be designated "partially blind," has been missed by the Census officials. Mr. N. Bishop Harman has drawn attention to the subject in a paper read at the recent meeting of the British Medical Association and reported in abstract on p. 520 of THE LANCET of August 19th. We agree with him that the statistics are practically useless. A very large proportion of those absolutely incapacitated as regards vision still possess perception of light or a very low grade of visual acuity, and are therefore excluded from the "totally blind." It is easy, however, to criticise the classification, but difficulty arises when the attempt is made to draw the line between those "blind for the practical purposes of life" and the "partially blind" who yet possess useful vision, as, indeed, is shown by the divergence of opinion expressed by various speakers in the discussion on the paper. Since the schedules have to be filled up by people who have no knowledge of the scientific methods of numerically estimating the degree of visual acuity, and since a man may be incapacitated by defect of the field of vision whilst useful central vision persists, it would seem best to have a broad classification of those who are "blind for the practical purposes of life" and those who are "partially blind." The same difficulty has often arisen before with regard to various institutions and asylums for the blind, many patients who are to all intents and purposes blind being ineligible for admission on account of the possession of a meagre but practically useless vestige of sight.

EXPERIMENTAL MEASLES IN THE MONKEY.

IT is somewhat remarkable that in regard to some of the commonest of the specific infectious diseases, such as measles and scarlet fever, we are still in ignorance as to the exciting cause in spite of the advances in bacteriological technique. Moreover, our information as to their communicability to animals is scanty in the extreme. Since discoveries in regard to the infection of animals are often the precursor of important advances, any observations bearing upon this matter are noteworthy. Some interesting experiments upon the transmission of measles to monkeys have recently been recorded by Dr. John F. Anderson and Dr. Joseph Goldberger in the Public Health Reports[1] of the United States for June 9th and 16th. The only work on this subject to which they could find reference was that of Dr. A. S. F. Grünbaum in the *British Medical Journal* of April 9th, 1904. He reported various attempts at infecting two chimpanzees, including the injection of blood taken direct from the median basilic vein of measles cases. He did not succeed in conveying the infection and suggested that the injections may even have conferred immunity. Dr. Anderson and Dr. Goldberger inoculated nine rhesus monkeys with defibrinated blood from four cases of measles, withdrawn at periods of not less than 14 to 32 hours after the appearance of the eruption. The blood in every case gave no visible growth in standard glucose broth in fermentation tubes, and therefore appeared to be sterile. The inoculations were carried out either by subcutaneous, intracardiac, intracerebral, or intraperitoneal injection, or by combinations of these methods. Of the nine animals inoculated only four gave any very significant evidence of reaction. All of these developed a febrile reaction nine or ten days after inoculation, and in three of them there was

[1] Published by the Public Health and Marine Hospital Service, Washington Government Printing Office, 1911.

an eruption of papules on the face, chest, scalp, or abdomen, which faded, leaving stains and causing a fine branny scaling. An attempt to re-inoculate one of these monkeys failed. Passage inoculations were made in five monkeys with defibrinated blood withdrawn from the hearts of other monkeys which had given evidence of a reaction after the introduction of blood from human cases of measles. Of these five animals, in one there was no result apparent, one gave an ill-defined reaction, and three showed well-marked effects. Dr. Anderson and Dr. Goldberger conclude that the rhesus monkey is capable of being inoculated with measles by the injection of blood from a human case, that this susceptibility is at best not very great, and that it is subject to considerable individual variations. They are apparently continuing their observations since they promise a further report and mention a successful passage to a third monkey generation. These results may lead to interesting and valuable work upon immunity and we await further work with interest.

EPIDEMICS OF ACUTE POLIOMYELITIS IN FRANCE.

EPIDEMIC poliomyelitis is *à l'ordre du jour* in France. From the year 1905 onwards, when scientific attention was more specially directed to the matter, France apparently suffered less than some other of the countries of Europe, but during 1910 epidemics appeared in many widely separated parts of the country. During last year the disease was diffused over a great part of the globe. It was reported as occurring in epidemic form in Germany, Austria, Scotland, Switzerland, Belgium, Denmark, Russia, as well as in Canada, the United States, and Cuba. An extraordinarily interesting epidemic was recorded[1] the same year in Naura, a small island in the Pacific, 160 miles from the nearest land, where, with a total population of 2330, there were 700 cases and 38 deaths. In France application was made to the Minister of the Interior to notify all the physicians of the provinces and to send them a series of questions by way of eliciting details concerning the incidence of the disease. The information thus gleaned was presented by M. Arnold Netter in report form to the *Académie de Médecine* on May 23rd, 1911, and will be found in the official *Bulletin*. This has now been published, and is a document of great value. In at least 33 of the provincial departments of France the disease was prevalent. In the departments of Aube and Yonne, within an area of 20 square kilometres, an epidemic of 19 cases occurred in three months, furnishing instances of direct infection, of familial contagion, and of infection after contact with a healthy individual from the affected area, who served as an intermediary. In the departments of Basses-Pyrénées and Landes a widespread epidemic took place in July, August, and September. It is of importance from the number of cases diagnosed as epidemic cerebro-spinal meningitis which turned out to be really cases of poliomyelitis, and from the number of *cas frustes*. The mortality was more than 10 per cent. At Salies, one of the towns, it reached 15·5 per cent. The coexistence or succession of two or more cases in one family was common. Direct infection was noted frequently; in other cases its influence seemed *nil*. One of a family of 10 was affected, but none of the other children, who were in no way isolated from the patient, developed the condition. One only, of another family of 13, fell ill. In Mayenne and Maine-et-Loire, where at least 33 cases occurred, confusion between poliomyelitis and cerebro-spinal meningitis was a noteworthy feature, no doubt because the meningeal symptoms of the former were pronounced in almost every instance. M. Netter quotes numerous examples of infection carried by an individual not himself affected. Thus a child of 10, living in Paris, was taken ill on Oct. 13th and developed a typical paralysis of the left arm on the 15th. Her sister went to the country and remained unaffected. On Nov. 13th a little girl of 8, with whom the latter had been living, was taken ill, and the next day was found to be paralysed in the right arm. M. Netter discusses the evidence that the virus of acute poliomyelitis may reside in the nasal fossæ, and the possibility of its dissemination by coughing or sneezing. The analogies between poliomyelitis and epidemic cerebro-spinal meningitis are also investigated. The report is, as a matter of fact, more of the nature of a preliminary communication, for much of the material has not yet been completely analysed, but it forms a contribution to the subject, not only of documentary value, but of practical importance. Prophylaxis is becoming a matter within the sphere of practical medicine. The precautions taken in ordinary fevers ought to be enforced in the case of poliomyelitis. In Sweden, Norway, Germany, Austria, and the United States notification is compulsory. M. Netter pleads for its adoption in France. In view of Flexner's successful experimental use of urotropin in inoculated monkeys—it appears in the cerebro-spinal fluid within a few minutes of its injection—M. Netter counsels its employment in the disease. He mentions that he has used it himself, but does not say with what result.

[1] Müller: Eine Epidemische auftretende Erkrankung des Nervensystems auf Naura, Archiv für Schiff- und Tropen-hygiene, September, 1910.

THE PATHOLOGY OF PAPILLŒDEMA.

A REPRINT from *Brain* (Vol. XXXIII.) contains an important contribution to the study of what is generally called "optic neuritis" from the pens of Mr. Leslie J. Paton and Dr. Gordon M. Holmes. The writers entitle their paper the "Pathology of Papillœdema," but its contents warrant an even more inclusive name. At the same time, it is certainly the finely described minute pathology of the condition and the excellent deductive reasoning from observed facts which give the article its great value. Together the descriptions and the reasoning seem to us to dispose conclusively of any explanation of "optic neuritis" which involves a necessary element of inflammation. The writers of this paper show convincingly that the essential feature of optic neuritis is œdema, that evidences of inflammation are often infrequent and of insignificant proportions, and that if the œdema is removed, then the optic neuritis, as seen clinically, is removed also. The work is based on a histological examination of 60 eyes, a larger number, we believe, than have been hitherto available for any single investigator employed on this problem. Clinically the eyes of 700 cases of cerebral tumour were examined during a period extending over ten years, so that it will be seen that Mr. Paton and Dr. Holmes make claims for their conclusions upon no inconsiderable mass of evidence. Of the 60 eyes examined histologically 50 were from cases of cerebral tumour and 10 from examples of other conditions such as meningitis, retrobulbar neuritis, and pressure atrophy. The specimens obtained represented all stages of papillœdema, and much care was given to the important point of examining the eye as short a time as possible after death. As the result of these examinations the writers state that in their opinion the presence of œdema unaccompanied by any sign of inflammation, acute or chronic, is the one unfailing histological change found in tumour papillœdema. They show also how œdema among nerve fibrils in a particular anatomical arrangement is responsible for the appearance known as the "macular fan," and hence they confirm an observation made some time ago by the late Mr. Marcus Gunn, whose opinion on such a point was, it will be remembered, rarely at fault. According to Mr. Paton and

Dr. Holmes, the vascular changes concerned in optic neuritis are confined almost entirely to venous and capillary congestion. The chief evidence which they find that could be interpreted as inflammatory is some slight small round-cell infiltration into the connective tissue sheaths of some of the vessels. This is always of small amount and affecting only one or two vessels in any disc examined. Another argument advanced against the assumption of a "descending inflammation" or an inflammatory perineuritis as a causal factor in papilloedema is the fact that acute and extensive inflammatory lesions may exist in the optic nerves and yet produce no optic neuritis. Mr. Paton and Dr. Holmes have themselves examined such a case. The histological proofs on which the arguments are based are well reproduced in many illustrations of slides introduced into the article. Perhaps the most interesting and original part of this paper is that in which the writers advance their hypothesis for explaining the origin of the œdema which they have shown to be the essential feature of optic neuritis. In their opinion this is to be found in "the venous engorgement that results from the rise of intravenous pressure that is necessary in order that circulation should be maintained in the intravaginal portion of the vein where this is subjected to an increased sheath pressure. The increased sheath pressure is also the origin of the second factor, the obstruction to the lymph drainage from the papilla." For a detailed support and explanation of this contention we must refer our readers to the paper itself, a piece of careful work which will repay perusal and on which Mr. Paton and Dr. Holmes are to be congratulated.

THE RELATION OF ENTERIC FEVER TO LOCAL AND METEOROLOGICAL CONDITIONS.

THE close relation existing between the contamination of drinking water and outbreaks of enteric fever is now so generally recognised and accepted as a fundamental fact in regard to the epidemiology of that disease that it comes almost as a surprise to find it called in question. It is well known, however, that a long controversy raged between the "localisation theory" of Pettenkofer and the contagionist view of Koch and his followers. Pettenkofer maintained that the morbidity and mortality from enteric fever in Munich rose when the ground water was at a low level, and further that the typhoid poison was not capable of communicating the disease until it had undergone changes in the soil. We have received a copy of a pamphlet by Dr. R. J. Beck[1] in which this controversy is reopened. It forms one of a series published in commemoration of the fiftieth anniversary of the enunciation of Pettenkofer's view. It is prefaced by a note from Professor Emmerich, who is a keen supporter of the localisation theory. He maintains that a bacillus carrier is not dangerous without definite local conditions of the soil, and states that the typhoid and cholera bacilli are so weakened by their passage through the alimentary canal that they can produce little or no pathogenic effect. Dr. Beck reviews the conditions in certain epidemics of enteric fever occurring in Germany, Hungary, and South-west Africa, paying attention both to considerations of drinking water and to climatic conditions at the time of the epidemic. He claims to have proved that in none of them was a close relation between the epidemic and infection of drinking water established, whereas in all there was a close relation between the climatic conditions and the beginning and end of the epidemic. He found that the outbreaks of enteric fever were regularly preceded by a dry period—i.e., a period of diminished rainfall, varying from 3 to 21 weeks, and that with equal regularity the epidemic ended three weeks after heavy rainfall. He therefore urges that in every epidemic the conditions of soil, rain, dryness, and ground water should be considered as well as the question of drinking water. We cannot but feel that, like the earlier supporters of Pettenkofer's theory, Professor Emmerich and Dr. Beck are inclined to underestimate the importance of the typhoid organism and to exaggerate that of the soil and ground water; at the same time it is easy to go to the other extreme, and Dr. Beck's observations may serve to draw attention to the many-sided nature of the problems.

[1] Typhus und Trinkwasser (Enteric Fever and Drinking Water). Von Dr. R. J. Beck. München: J. F. Lehmann. 1911. Pp. 56. Price M.3.

COMPLETE TRANSVERSE DESTRUCTION OF THE SPINAL CORD FROM A BULLET WOUND WITHOUT PENETRATION OF THE SPINAL CANAL.

IN the *Maryland Medical Journal* for July Professor R. Winslow has reported two cases of a remarkable injury—complete transverse destruction of the spinal cord from a bullet wound without penetration of the spinal canal. In the first case, a man, aged 24 years, was shot with a pistol, the bullet entering in the left seventh intercostal space just behind the mid-axillary line. He fell to the ground paralysed below the umbilicus. There was severe pain in the upper abdomen and chest. He was taken to hospital, where he was found to be completely paralysed both in sensation and motion up to a line extending round the body 1½ inches under the umbilicus in the middle line in front and curving upward along the upper border of the twelfth rib to the spine. Above the paralysed region was an area of hyperæsthesia 3 inches wide. The paralysis was of the flaccid type. Cremasteric and slight plantar reflexes were present, but the patellar and tendo-Achillis reflexes were absent. He could not pass urine and the bowels acted only after enemata. Kernig's and Babinski's signs were absent. Complete transverse destruction of the cord at the ninth dorsal segment was diagnosed. Irregular exacerbations of temperature supervened, but the general condition was good. A radiogram showed the bullet in or about the body of the eighth dorsal vertebra. Believing that the spinal cord was completely divided Professor Winslow determined to explore the spinal canal and, if justifiable, suture the cord. He removed the laminæ of the seventh, eighth, ninth, and tenth dorsal vertebræ. There was no blood in the canal and the dura was uninjured. The dura was opened widely, permitting the escape of much cerebro-spinal fluid. The cord did not appear to be altered, though subsequently some grumous material escaped from it. There was nothing more to do than to close the wound. Healing took place by first intention and the patient was neither improved nor made worse by the operation. The fever continued, he became emaciated, and bedsores formed, but he was living at the time of the report. In the second case a girl, aged 18 years, was shot in the left side of the neck. The bullet entered about the middle of the sterno-mastoid muscle and passed downward, inward, and backward. She fell forward with paraplegia, paralysis of the left arm, and dilatation of the left pupil. There was complete anæsthesia below the first rib on the left and the third rib on the right side. Retention of urine and fæces ensued. The diaphragm was not affected. Sensation and motion partially returned in the left arm. The reflexes were abolished and bedsores quickly formed. Bullet wound of the second dorsal vertebra, crushing or otherwise injuring the cord, was diagnosed. Death occurred on the twenty-second day. The necropsy showed that the bullet passed behind the brachial plexus, between the anterior and middle scaleni muscles, broke the tip of the transverse process of the seventh cervical vertebra, penetrated the body of the second dorsal, cut a piece from

the first rib, and impinged on, but did not penetrate, the spinal canal. Bloody serum in the canal and spinal meningitis were present. The cord was not penetrated or compressed, but was disintegrated and much reduced in size opposite the position of the bullet. In these cases the injuries appear to be due to concussion of the spinal cord, though it is difficult to understand how complete transverse destruction of the cord can occur without direct impact. However, its occurrence is recognised. During the American Civil War a number of such cases was observed. In his "Manual of Military Surgery," written for the use of surgeons of the Confederate Army, the late Professor J. Chisolm stated that concussion produced by explosion of a shell near the back was a not infrequent injury, and that its symptoms were pain and impairment of motion and sensation in the lower limbs, amounting at times to paralysis. Colonel W. F. Stevenson states in his "Wounds in War" that concussion of the cord without fracture of the spine may be produced by shell fragments or small arm projectiles, and that paralysis below the injury may be absolute, but if secondary changes do not take place in the cord, and hæmorrhage into the spinal canal does not occur, recovery may be rapid and complete. The treatment of complete division of the spinal cord is still a moot question. Physiologists declare that regeneration is impossible once the cord has been divided, but three cases of suture with slight improvement have been recorded by American surgeons. The first surgeon to perform the operation was Dr. Francis T. Stewart of Philadelphia. In a case of bullet wound of the dorsal spine he found the cord completely divided, with an interval of three-quarters of an inch between the ends. He freshened the edges and sutured the cord with three chromicised catgut sutures. The patient, who had been paraplegic, soon showed improvement, and 16 months after the operation could perform various movements with the toes and legs, and had control over the urine and fæces.

ANCIENT MEDICINE AND CLASSICAL WRITERS.

A GREEK scholar, M. Jean Psichari, has been publishing some interesting notes intending to prove indebtedness on the part of Sophocles in the "Philoctetes" to Hippocrates. Some suggestions of this kind concerning the two classics have been made before, but M. Psichari contends that two important passages have escaped notice. These are in verses 752–784 and 823–825, wherein the special medical significance of the words *στάζειν* and *αἱμορραγεῖν* are exemplified. In Hippocrates's works and the Hippocratic corpus these words are clearly differentiated, the first having been used only for slight issue of blood by drops, whilst the second was applied to indicate profuse hæmorrhage. According to Hippocratic theory, slight nasal bleeding was in certain cases considered a serious symptom, whereas profuse bleeding was regarded as providing hope of speedy recovery. It is so in these passages of the "Philoctetes," the increased hæmorrhage being followed by amelioration and sleep. The whole description of the wounding of Philoctetes is Hippocratic: his perspiration when sinking to the earth, his impaired vision shown by his inability to see Neoptolemus close by him, and the difficulty of speech and falling backward of the head are all mentioned by Hippocrates in a passage describing evil results arising from a stoppage of the proper circulation of the blood. Hippocrates would have been 50 or 60 years of age, according to which of the two dates usually assigned to the time of his birth is accepted, by the time of the production of the Philoctetes, and so Sophocles may have read some of the medical author's treatises, or they may have been common views of medical lore of the time, and so appear in the work both of the specialist and the dramatist.

The interest taken in the medical work of the ancient civilisations is certainly growing. Herr Wellman, for example, has recently assigned the authorship of the list of animal remedies in Books 28–30 of Pliny's "Natural History" to Xenocrates of Aphrodisias, a physician who preceded Galen, and was writing about 70 A.D. That Pliny's source was a Greek one is proved by parallels from Serapion, Archigenes, and Pseudo Democritus, and all point to the physician Xenocrates, whose remedies Galen ridiculed. Four extracts from the magic pharmacology of Xenocrates are quoted by Galen and Alexander of Tralles, and all these appear in Pliny. Herr Wellman has discovered references to five works by Xenocrates and has gathered together all likely to be known of him, unless an Egyptian papyrus reveals to us a portion of their lost contents. By the way, a classical author from whose work some curious items concerning the medical and anatomical knowledge of the ancients could be extracted is Melampus, whose work *παλμῶν μαντική* gives the omens derivable from observing the twitchings and throbbings and involuntary movements of various parts of the body. His treatise may be found in the "Scriptores Physiognomiæ, Veteres," and although the manuscript there used is incomplete it provides omens drawn from movements of 57 parts of the head, 83 of the trunk and upper limbs, and 49 parts of the lower limbs. The brow and the eyes are the most important parts in the author's opinion, though he holds that they may be slightly surpassed by the hands and feet in mantic value. Melampus alleges that much of his lore was derived from Egyptian sources, but recent research has detected many similar descriptions of bodily movements, or salissationes, in the "Oneirocritica" of Artemidorus, many of whose omens have been definitely traced by M. Alfred Boissier of Geneva to the augural omens and divinatory cuneiform tablets of Babylonia, where medicine and magic were more closely intermingled than in any other old-world culture. The work of Melampus requires comparing with the cuneiform, mantic and medical literature, and with the medical authors both of Greece and Rome. Salissatio, the Latin term, first occurs in the "De Medicamentis Empiricis" of Marcellinus Empiricus, who prescribes a remedy, "ad cordes pulsum suie salis sationem." This is as definitely a medical word as the Greek equivalent *παλμὸς* of Hippocrates and Aristotle.

THE ETIOLOGY OF BLACKWATER FEVER.

BLACKWATER, or hæmoglobinuric, fever is a malady which exacts a heavy toll in health and life from Europeans who, as officials, planters, missionaries, or in other capacities, have to reside in certain tropical parts of the world. The origin of this disease has hitherto been obscure, and referring to this, Sir Patrick Manson, in the last edition of his well-known "Manual of Tropical Diseases," observes that one of the most important of the still unsolved problems of tropical medicine is that of the etiology of blackwater fever. Efforts have not been wanting, and many earnest attempts have been made by competent investigators to throw light upon this difficult subject. Among the many workers who have laboured to this end may be mentioned Koch, Plehn, Stephens, Christophers, Bentley, Barratt, and Yorke. The main theories put forward up to the present time, in support of which more or less evidence has been adduced, are four in number—viz.: (1) Blackwater fever is a manifestation of an active malarial infection; (2) it is the result of quinine poisoning; (3) it is an induced condition arising from previous repeated attacks of intense malaria lasting over a certain time; and (4) it is caused by a specific organism, which, however, has not yet been isolated or identified. A recent contribution to the discussion of the etiology of this disease comes from the

Panama Canal Zone, where two American medical men, Dr. W. E. Deeks and Dr. W. M. James, physicians to the Ancon Hospital, have made a study of 230 cases of blackwater fever which occurred in that region between January, 1905, and September, 1910.[1] These observers say that their conception of the malady is the same as that of Marchifava and Bignami—namely, that "the hæmoglobinuric attack is a syndrome which is encountered not rarely, especially in hot climates, in the course of a malarial infection." They also agree with the view that instead of classing the disease among the pernicious fevers a special place should be reserved for hæmoglobinuria among the clinical forms of malarial infection. The conditions for investigation of this disease in the Canal Zone appear to be very favourable, a large percentage of the persons attacked being treated in hospital, where their personal histories can be properly inquired into. In a large proportion of the cases there was a history of previous hospital admissions, and of those which could be verified no less than 94·6 per cent. were due to malaria. Moreover, Dr. S. T. Darling, chief of the Board of Health Laboratory in the Canal Zone, under whose direction necropsies were made at Ancon Hospital, reports that he has not yet failed to find evidence of malarial infection, as shown by the presence of pigment or parasites, in each case of hæmoglobinuric fever on which a post-mortem examination was made, when such evidence had been properly sought for. There is no proof that blackwater fever can spread from one country or locality to another like kala-azar, yellow fever, or sleeping sickness. The disease only occurs when the following conditions associated with malaria are present—viz, the presence of a population non-immune to malaria; the prevalence of malaria in such quantity as to produce an almost continuous infection in this population; a large proportion of æstivo-autumnal malaria, because the amount of hæmoglobinuric fever is in direct proportion to the intensity of this variety; neglect of prompt and continued administration of quinine, especially in primary attacks, to persons non-immune against malaria. It has been demonstrated in modern times that the disease is controlled by anti-malarial prophylaxis. There is a personal predisposition in certain individuals to blackwater fever, and this predisposition is enhanced by repeated attacks of malaria. Dr. Deeks and Dr. James believe that under certain conditions the toxins of malarial poison produce hæmolysis; but why some persons are thus acted upon, while others with equal amounts of infection are not, is a problem which still awaits solution. They regard blackwater fever, therefore, as a manifestation of malarial toxicity brought about for the most part by repeated attacks of malaria; it may occur coincidently with an acute malarial paroxysm, it may be excited by any depressing influence, such as overwork or a chill, and it may be induced by the administration of quinine. Quinine alone or malarial infection alone do not cause hæmoglobinuric fever; it is caused by one of these conditions "plus the toxin eventuated during the course of one or more malarial attacks." Syphilis is a predisposing cause owing to its influence in the production of malarial recrudescence. In order to prevent recurring attacks of malaria, with possible subsequent production of blackwater fever, it is necessary to raise the patient's resistance to a maximum and to eradicate the malaria by a thorough course of quinine. The conclusions at which these investigators have arrived do not appear to differ very much from those given by Captain S. R. Christophers, I.M.S., and Dr. C. A. Bentley in their joint report upon blackwater fever after their inquiry on the subject in the Duars at the foot of the Eastern Himalayas in 1907–08. This work we reviewed in the columns of THE LANCET of Feb. 20th, 1909. The evidence so far adduced seems to support the opinion that blackwater fever is a condition intimately associated with malaria and is not a separate disease due to a specific organism.

[1] A Report on Hæmoglobinuric Fever in the Canal Zone: a Study of its Etiology and Treatment, by W. E. Deeks, M.A., M.D., Chief of the Medical Clinic, Ancon Hospital, and W. M. James, M.D., Physician, Ancon Hospital. Published by the Isthmian Canal Commission Press. 1911. Pp. 177.

ANÆMIA AND WANT OF VENTILATION IN THE FRENCH NAVY.

WIRELESS telegraphy in the French Navy involves, as we mentioned last year,[1] unhealthy conditions for the operators on board ships. The offices in which they do their work are deep down in the ship, under an armoured deck, which is built of steel and packed round with felt and asbestos to exclude sound; they are small, under 400 cubic feet in content, and ill-ventilated. Even in the early days it was prophesied that damage to health would result, although none had yet been observed, and latterly it has been reported that the operators were getting thin, losing strength and weight, and becoming anæmic. This anæmia has been investigated by Dr. D'Auber de Peyrelongue, médecin de 1re classe de la marine (staff surgeon), and by him is discussed in the recent numbers of the *Archives de Médecine et Pharmacie Navales*. Unfortunately, he was unable to commence his special observations during the manœuvres, when these men are employed the most busily and for the longest hours, and show most markedly the effects of their special occupation; indeed, he had to wait till after they had returned from their fortnight's manœuvre leave, by which time they had in some degree recovered. Even then he found among them some anæmia, as 26 wireless operators from battleships showed on an average only 4,218,000 red blood corpuscles per mm. cube and 81 per cent. of hæmoglobin, though seven operators from torpedo-boat destroyers (where the offices are on the upper deck in the open air) averaged 4,655,000 red blood corpuscles and 86 per cent. hæmoglobin. Sailors were less anæmic; stokers had fewer corpuscles and less hæmoglobin. Dr. D'Auber de Peyrelongue considers the possible causes of this anæmia, dismisses a theory that it is due to the ozone formed with the sparks (he estimates the maximum of ozone present at 0·002 per cent.), refuses to believe it due to the nitrites simultaneously produced (which he judges to be 0·0005 per cent. at most), declares it is not caused by the vapour of petroleum which is also present, but ascribes it to want of ventilation. He finds that in the wireless room there are few bacteria, but a great deal of zinc oxide dust, that the temperature here is 5° F. higher than in the neighbouring passages, and that the humidity is high; he has measured also large percentages of carbonic acid, 1·55 per cent. the maximum. The carbonic acid content of the air on the mess decks of men-of-war he puts at 0·12 to 0·78 per cent., the outer air containing 0·04 per cent., and though he holds that carbonic acid is not of itself dangerous in air till it reaches a proportion of 10 per cent. he insists that a proportion of 1·5 per cent. evidences very insufficient ventilation—about 50 cubic feet per hour per person. Therefore he pleads for more cubic space for wireless rooms and for better artificial ventilation. Fans have sometimes been lent by officers, and at times the offices have been blown through by jets from the torpedo charging apparatus, but only a permanent installation of a fan will be of any use. Then it is said that if a fan is supplied men will not use it always. That objection is valid; the fan makes a noise, in so small an office a sufficient fan may cause a bitterly cold draught, and unless the intake be wisely placed the fan may bring down smells and dust, and force the men to close the inlets. Dr. D'Auber

[1] THE LANCET, March 12th, 1910.

de Peyrelongue allows all this, but conditions are being improved. Wireless operators no longer suffer as formerly from mercurialism, since the old mercury interruptor has been done away with. Anæmia among them, too, will in time be mastered, and as a matter of fact after two years of discussion one ship has now a ventilating fan installed in the wireless operator's office.

A MEMORANDUM ON CHOLERA.

WE have received a Memorandum on Cholera, for the guidance of Europeans in the remote out-stations of British Malaya, which has been prepared under the directions of the Colonial Office by Mr. John D. Gimlette, Residency Surgeon, Kelantan, Straits Settlements. A large number of copies have been sent to Singapore for distribution by the Government. The memorandum is a four-page sheet of foolscap, and is written in clear, simple language which can easily be understood by any educated person. It begins with a rough sketch of the disease and its mode of spread, with a short and vivid description of the onset and progress of an ordinary case, and brief directions for putting the patient in the way of recovery in the absence of medical aid. Instructions follow for the disinfection and disposal of excreta and contaminated substances, and stress is laid on the virulence of stale cholera stools and discharges. Owing to the deep-rooted Malay prejudice against hospital wards, the treatment and isolation of natives during an outbreak in a purely Malay district are beset with difficulties; but where the native population is mixed it is possible to organise temporary field hospitals or camps on high ground within a mile or two of the main centre and to supplement these with segregation camps for contacts and suspected or doubtful cases. The memorandum proceeds to give general rules for the safeguarding of the public health in infected districts, with special reference to the water-supply and the disposal of the dead and the danger of uncooked foods. It points out that judgment is required in giving directions for the burning of dwelling places and in disturbing Malay burial customs, because the confidence of the native community is easily shaken, and there is always risk of concealment of deaths and of general panic. Ten days' quarantine is recommended, in order to be on the safe side, although this is twice as long as the period laid down by the Venice Convention. The importance of care, courage, and calmness on the part of Europeans in time of epidemic, both for their own sakes and as an example to the natives, is insisted on. Above all things, prejudice must not be aroused in the native mind. Organised hospital treatment being out of the question, the uneducated Malay has to be treated in his own home in the midst of his family, and "personal interest in the patient is almost everything." Personal influence may be of immense value in checking the disease at the beginning of an outbreak. The memorandum concludes with a copy of instructions to natives, couched in the phrases of the East, which have been translated into the Malay tongue and distributed among the head men of infected areas. They are from the pen of Mr. Warren Barnes, and their picturesqueness by no means impairs their simplicity or their practical value.

THE King has been pleased to grant to Dr. Ernest Cotton Fischer, professor of ophthalmology at the School of Medicine, Cairo, the Royal licence to accept and wear the Insignia of the Third Class of the Imperial Ottoman Order of the Medjidieh, which decoration has been conferred upon him by the Khedive of Egypt with the authorisation of the Sultan of Turkey.

THE DRAINING AND SEWERAGE OF LONDON.

MOST of us in London must have noticed during the past few years a number of wooden enclosures in the main thoroughfares in various districts, evidently connected with works of excavation. Yet comparatively few, perhaps, are aware that, deep below the surface, there is in progress one of the largest additions to the existing network of sewers yet undertaken since their formation by the Metropolitan Board of Works. The additions, estimated to cost £3,750,000, are shown on Fig. 1, and include new outfall and intercepting sewers, additional provision for storm water, extra pumping facilities, and so on.

In these strenuous days all are apt to take their surroundings too much as a matter of course. Drains—unless they become a nuisance from some defect—being out of sight, are more than many things likely to be out of mind also. Who associates the outlay of £11,000,000 with the opening of a bath waste? Yet the present system has cost this sum to enable a resident within the County of London to satisfactorily perform this simple act; moreover, it entails that an army of 2000 men shall spend their working lives immured in darkness, often midst noisome fumes and exposed to risks of flood and of fire from petrol gas. About 1000 of these men are employed by the local district councils. The aspect that such work bears in its relation to the public health may well claim our attention.

Hydrographical Features of the London Area.

That we may the better realise the elemental difficulties with which engineers have to grapple, and engineers of the London County Council in a particular degree, it will be well to refer to the hydrographical features of the district to which they have to minister, covering as it does an area of some 120 square miles. Reflection shows that these features are the basis of the whole scheme of drainage, the streams and springs of bygone days having either been converted into our main sewers or been largely responsible for their construction and position. Whitaker's "Geological Survey of England and Wales" includes the results of many borings in and around London. These indicate that a very different condition of things, in times not far remote from the present, must have existed on each side of the river than is now noticeable. (See Note A.) The continual raising of the surface of the ground in the neighbourhood of the city and the nearer suburbs must not be forgotten. Each load of building material ever brought in by barge or cart or rail has aided to raise the level.

At the beginning of the Christian era much of the low-lying land on the south side of the river (now within the jurisdiction of the London County Council) from Abbey Wood to Barnes was under water, and in many places on the north side also. Certainly at a period not very remote the river spread over Plumstead Marshes and parts of North Woolwich, across the Isle of Dogs, some parts of Deptford, and the greater part of Rotherhithe and Bermondsey, over much of Southwark, Walworth, Lambeth, and of Vauxhall, where the Effra River from Dulwich—now an important sewer, with a branch from Nine Elms—emptied into Effra Creek. The Thames spread across to Westminster, round Thorney Island as far back as the ornamental water by the Horse Guards' Parade, where it was joined by a branch of the Tyburn river (see Note B), over Pimlico, and round the backwater of what was then Chelsea Island, formed at the mouth of the Westbourne, now the Ranelagh sewer, and still further back over Fulham and parts of Hammersmith up to Shepherd's Bush, where it met the Stamford Brook, now emptying into Hammersmith Creek. On the opposite side, again, the river covered portions of Battersea and lower Wandsworth, where the still open waters of the Wandle, much polluted, empty into the Thames. The higher ground of the places named would show as islands here and there. Spreading over this lagoon in times of flood, the swollen river, checked in its course, deposited its load of earthy matter from the upper reaches to form the marshes, with their tidal creeks kept open by the many streams that gathered on the uplands. The city by some is believed to have been named by the Celts "Lyn Din," or Lake Town. (See Note C.)

The three low eminences of Ludgate Hill, Cornhill, and Tower Hill, on which the City proper stands, were surrounded

on the north by the great moor, and on the east by the marsh and fen and the estuary of the Lea. This is at Blackwall, between the East India and Victoria Docks. The south and west were bounded by the Thames and the Fleet river (see Note D). The Walbrook, now a sewer, drained the moor, passing through the centre of the City from north to south, entering near the Moorgate and running out into Dowgate Dock. Another stream, the Langbourne, yet another sewer, drained the eastern fen, crossing the City due west to its centre, and there, turning south by where is now St. Mary's Woolnoth, spread into two or three streams or sheres and was then called the Sherebourne, entering the Thames by London Bridge.

In all, there are over 20 streams within the area of the County Council. Nearly all are hidden in sewers, but they have to be taken into serious account. From the surrounding hills the water flowed towards the Thames, or soaked along the clay and gravel, saturating marsh and moorland, or helped to feed the springs whose names, like those connected with the streams, are daily on our tongues. It is this abundance of water that has been, and still is, one of the chief difficulties in dealing with our sewerage. The embankment of the river, at a cost of £2,150,000, helped immensely to overcome this, but it will be noticed, as the progress of draining London is followed, that the conveyance of storm water added to the sewage is one of the chief causes of the enormous outlay. The district has been described as formerly—

> "A land of flood, of marsh, and rills,
> Of wooded slopes and heath-crowned hills."

In addition to the responsibilities within the limits of the County of London there are others. There are certain outlying districts, including Hornsey, Tottenham, and Wood Green, a part of Willesden, Acton, West Ham, and also a part of East Ham, whose natural lines of drainage between the hills require an easement through the County Council's sewers, for which they pay a rental. This on the north side means a provision for an additional 500,000 people. On the south this applies to a part of Beckenham and Penge, while part of Croydon and Norwood are also taken in, making an addition of some 35,000 to the population to be provided for. These cover an area of over 20 square miles, making a total area of upwards of 140 square miles dealt with by the main drainage system.

Historical Account of the Drainage of London.

The subject of drainage has exercised the mind of the British legislature from the time of Henry III., and many have been the enactments passed respecting it, including the well-known Bill of Sewers in the twenty-third year of Henry VIII. in 1531. Especial attention was frequently given to the necessities of the metropolis. These Bills, however, related to surface or land drainage only, for sewers as conduits for water-borne excreta or otherwise polluted liquid are of comparatively recent date. Though a great number of sewers existed in the eighteenth century, they were but more or less enclosed channels of the water-courses taking the natural drainage of the land, and prior to 1815 it was a penal offence to use them for any other purpose. (See Note D.) The older civilisation seems to have furnished examples of which the later ones have been slow to take advantage. Layard's researches in Nineveh, made early in last century, disclosed a complete system of sewers and house drains which were in use there in the year 1200 B.C.

At the beginning of the nineteenth century the population of London is given as 958,863, occupying some 136,000 houses, all drained into cesspools, which had superseded that mediæval abomination, the lay-stalls, or heaps of dung and garbage dumped in corners to be removed when convenient. The death-rate was 41 per 1000. About the year 1810 water-closets of a primitive hopper pattern first came into use. These were connected with a cesspool by a square brick drain, and as it became necessary to provide an outlet for the additional amount of water the overflow was carried into the nearest sewer or water-course in defiance of the existing law, which by 1815 had become a dead letter. On the more general adoption of water-closets it was found convenient to dispense altogether with the intervening cesspool, and to carry the house drain directly into the nearest sewer or water-course. This action was stimulated by the great increase of buildings and cesspools that took place about 1830, these latter having proved both a source of annoyance and disease. The saturated ground was contaminated by the cesspools and middens of the many generations of dwellers within the limited area, and the conditions were ripe for the distribution of any water-borne disease when an epidemic once obtained a foothold. The population in 1831 had risen to 1,424,896, and in this year cholera appeared.

Cholera Epidemics.

Dr. Spencer Thomson, writing in 1852 of the visitations of cholera, says that the first visitation in 1831 was traced back through Europe and Asia to the swampy district round the mouth of the Ganges in 1817. This visitation in 1832 carried off in London alone no less than 15,000. Speaking of the second epidemic, he says that nothing had been done in the interval, and that we were prepared to nourish and foster its mysterious germs in the fœtid and stagnant air of the city, unventilated, undrained, with water half supplied or not supplied at all, or tainted with decomposition of every kind from human excrement upwards, and he adds that such will be the case again. The same views were held by other medical men and laymen who were able to appreciate the conditions. Amongst the tidal ditches of Bermondsey in the great epidemic of 1848-49 187 deaths occurred in a population of 1000. (See Note E.) In 1847 diarrhœa, dysentery, and cholera had been more than usually fatal. In London the deaths from these causes rose from 38 in the first week of July to 188 per week in the middle of August. Typhus fever and scarlet fever were also epidemic. During the epidemic of cholera, 1848-49, the deaths in London in the six weeks from Nov. 21st, 1848, to Jan. 1st, 1849, rose from 28 to 46 per 1000. The proportion of these deaths varied with the elevation and with the area of water-supply, the Lambeth and Vauxhall Companies area having the larger proportion of cases. (See Vital Statistics, W. Farr.)

Abortive Plans.

The condition of the river becoming worse—with cesspool overflows draining into the sewers on the general adoption of water-closets—in 1834 John Martin, the eminent and imaginative painter, proposed a plan for building an embankment and collecting the outfalls of the sewers on each side of the river into intercepting sewers, to discharge in the river below London. He also prepared sketches for a suspended lighthouse on the Goodwins. This, unlike his sewerage scheme, was impracticable, for he believed the sands were but 18 ft. thick, not 80 ft. to the chalk, as they are now known to be. (See Note F.) Martin's plans formed the subject of a Royal Commission, but without result. Meanwhile the evil increased with the population. At this time public and private pumps were numerous, ground water being abundant, cool, and probably sparkling with ammonia, while some of the large water companies drew their supplies from the immediate neighbourhood between Waterloo Bridge and Battersea.

Prior to the creation of the Metropolitan Commissioners of Sewers in 1848 London was administered by no less than eight separate Commissions. The *Times*, commenting in 1855 upon the state of affairs that had existed, says that "within the metropolitan limits the local administration was carried on by no fewer than 300 different bodies, deriving powers from about 250 local Acts independent of general Acts. Such a multiplicity of often ill-informed bodies only added to the existing confusion and trouble, each one doing what seemed good in its own district independently of any difficulties it created for its neighbour." It is deplorable to contemplate the technical ignorance displayed in the early period of divided responsibility in regard to the size, shape, and varying levels of the sewers intended to connect at the district boundaries. Large sewers discharged into small ones, square ones into round ones, and egg-shaped sewers, which had the smaller end down, were connected with others reversed, with the small end up, the whole result being chaotic.

John Martin's proposal was partially adopted at the creation of the Metropolitan Board of Works in 1856. Prior to that his scheme, though neglected at the time, took hold, for in 1854 a Mr. Thomas Wickford, an engineer, further elaborated Martin's plan, carrying the northern outfall sewer to Barking Creek and the southern one to the Greenwich Marshes, with provision for chemically deodorising the sewage before discharging it into the Thames. but, like the original suggestion, nothing came of it,

The fundamental idea was revived on many occasions by engineers appointed to report on the subject, but without immediate results.

Abolition of Cesspools.

Under pressure of public opinion during the cholera epidemic of 1848–49 Parliament combined in one body the several authorities then existing, under the style of the Metropolitan Commissioners of Sewers, passing the Act on Sept. 4th, 1848. Their jurisdiction extended over a radius of 12 miles from St. Paul's, but their powers were restricted. The members of this commission were nominated by the Government. Under the control of this Board all cesspools were abolished, the official number being given as 200,000, with an estimated capacity of 5,250,000 cubic feet, incredible as it now seems with cholera present and water being drawn by the companies between Kew and Waterloo Bridge. The whole of this vast mass of filth was shot, or rather pumped, into the Thames. It was now made compulsory for each house to drain into a sewer, for which purpose a great advance was made by the introduction of pipes in place of brick drains. It was owing to the efforts of this commission to obtain information relative to the position and levels of existing sewers that we owe the large-scale Ordnance Survey.

This commission was replaced the following year by a still more energetic body, who aspired to entirely reorganise the main drainage system, but failed to agree as to the plan to be adopted. Other commissions were created in quick succession, composed of men of undoubted capacity and ability for the duties, but without any practical result. In all, between the years 1847 and 1855 no less than six commissions were appointed, who had before them no less than 116 plans, including in 1854 one costly scheme for draining London on the separate system, introduced by the General Board of Health. This was a self-appointed and apparently well-informed watch committee of citizens, but either from failing to agree amongst themselves or with the Government, or from lack of Parliamentary powers to carry out their plans, they dissolved before they had done more than make proposals and criticisms.

Foul State of the River in 1855.

Meanwhile, in 1855 the population had risen to 1,889,307 on the north side and on the south side to 696,761, making a total of 2,586,068, while the houses had increased to 329,467. The death-rate, notwithstanding the cholera epidemics, had fallen in 1851–60 to 23·7, from 24·8 in the previous decade. An article published in THE LANCET in July, 1855, when matters had reached a climax, may well be quoted as describing the condition of the Thames at this time. It says:—

> The waters of the Thames are swollen with the feculence of the myriads of living beings that dwell upon the banks, and with the waste of every manufacture that is too foul for utilisation. Wheresoever we go, whatsoever we eat or drink within the circle of London we find tainted with the Thames. ..... No one having eyes, nose, or taste, can look upon the Thames and not be convinced that its waters are year by year and day by day getting fouler and more pestilential. ..... The abominations, the corruptions we pour into the Thames are not, as some falsely say, carried away into the sea. The sea rejects the loathsome tribute, and heaves it back again with every flow. Here, in the heart of the doomed city, it accumulates and destroys.

This description is not the least exaggerated. The conditions were aggravated by the retention and consequent deposition of the sewage in the neighbourhood of its discharge, as owing to the necessarily low level of the outfalls it could only escape shortly before low tide, being dammed back at other times in the sewers. Whatever sewage escaped, before the flow checked it, was carried back up stream, and only returned again to be mixed with a still fouler volume. Thus the process was repeated. Large deposits accumulated constantly in the river and the sewers; this fermenting, gave off gases such as are seldom or never met with under present conditions. During periods of heavy rainfall the sewers filled, especially if such storms occurred during high tide. At times they were unable to withstand the pressure and burst, flooding the neighbouring district, or in low-lying places vomited back their contents through the house and street gullies, with the same results. This question of flooding has been a difficulty up to the present time, and is largely responsible for the additional sewers in course of construction.

Sewerage Scheme Carried Out.

On the formation of the Metropolitan Board of Works in 1855 (see Note F), the plans of reform as designed by the late Sir Joseph Bazalgette, their engineer, were well-nigh wrecked, like those of their predecessors, through want of sufficient Parliamentary powers to give them independent action. After long debate over details, with further reports from experts appointed by the Government, additional powers were obtained following a change of Ministry, which enabled the much-delayed sewerage scheme to be taken in hand in the late autumn of 1858, though the work was not completed until 1874. Provision was made by Sir Joseph Bazalgette for a population of 3,450,000, accumulating 108,000,000 gallons of sewage every 24 hours. Added to this, allowance was made for a rainfall of ¼ inch over the more populated area and 1/10 inch over the remaining suburban portion, the south side being very sparsely populated. Even this very limited provision amounted to 286,000,000 gallons, making a grand possible total of 394,000,000 gallons. Any excess over this had to depend upon the storm overflows provided for its removal directly into the river within the metropolitan area. It is evident, if such a provision was then found to be inadequate, how much greater must be our present requirements, with the population increased by more than one-third, and with the greater part of the open land now covered by buildings.

The leading feature of this great undertaking, which up to 1888 had cost £6,824,877, was the interception of the sewage in its passage to the river, and its conveyance to a point well below London, here to be collected in reservoirs sufficiently large to prevent the necessity of discharging it, excepting at ebb tide, when it was turned into the river in its crude state. Embanking the river was also contemplated, though it was not till 1862 that the Board were entrusted with this work. Both the immense outfall reservoirs were completed and in use in 1864, by which date about one-third of the sewage had been diverted from direct communication with the river, the result being quickly perceptible in the improved condition of the river within the metropolitan area, though the death-rate, which between 1857 and 1860 had fallen to 23·7, rose between 1861 and 1870 to 24·4, the cholera epidemic of 1866 intervening. This outbreak in the East of London was considered by Dr. Netten Radcliffe to have arisen from the consumption of water taken from the Lea. In 1865 His Majesty, the late King, then Prince of Wales, formally opened the Crossness pumping station. The low-level sewer on the north side and the Embankment were not, however, fully completed until ten years later—1874.

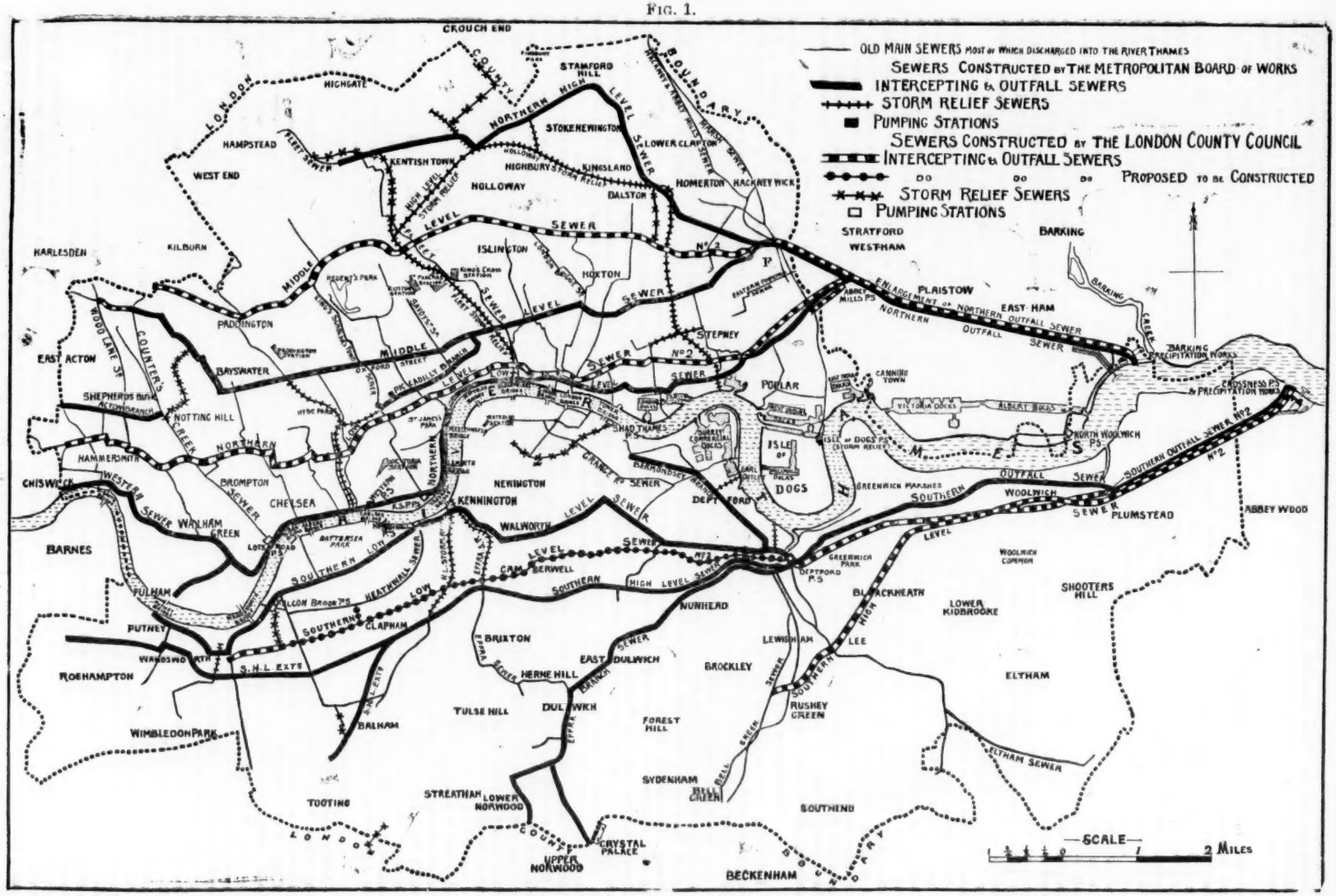
Account of the Sewerage System.

The system as a whole at that time could be divided into four sections. First, the local sewers, collecting the sewage. These were administered by the various district boards, being under the supervision of the Board of Works to ensure uniformity. The second section comprises the main sewers falling from the higher ground to the river, many of them the converted water-courses; into these the local sewers are connected. The third section consists of the intercepting sewers, three on each side of the river, with certain branches. These great sewers radiate from Old Ford and Abbey Mills (see Fig. 1) on the north and Deptford on the south, spreading like a fan westward into three main branches. On each side one branch, the low-level intercepting sewer, rests on the river bank, the middle-level intercepting sewers are half-way up the rising ground, while the high-level intercepting sewers gradually rise to their highest points at Hampstead on the north and at Sydenham on the south; only in this last case it is called the Effra branch sewer, occupying the course of an old stream. The main trunks falls eastward, being the outfalls. In a measure they all run parallel to the river, and in their course intercept the several main sewers, running at right angles to them. The high-level and mid-level sewers fall by gravitation. The contents of the lower-level sewers have to be raised by pumping into the outfall sewers. The outfall sewers on either side discharged from the first into reservoirs at Barking and Crossness respectively, and these were capable of containing six hours' flow which had to be discharged at each ebb-tide.

There yet remain to consider the storm relief sewers. As far as possible sections of the old main sewers were utilised for this purpose. At certain points a new main sewer is brought side by side with an old one, and the two are formed into one large sewer or chamber for a short distance, when they again separate, the new one going to the outfall

FIG. 1.

FIG. 1.



Map showing the various sewers and pumping stations in London. Old Ford, so often alluded to in the article, is not on the map; it is at F, just south-east of the spot where the northern high-level and new and old middle-level intercepting sewers meet.

at Crossness or Barking, and the old one delivering into the Thames as before. The chamber thus formed is divided longitudinally by a dwarf wall or weir (see Fig. 2). The storm water, pouring through the new main sewer, cleared it to a large extent of the normal sewage flowing to the outfall, but the rising water soon overflowed the dividing weir and escaped through the old relief sewer directly to the river, these old sewers discharging storm water on either side within the metropolitan area. This practice, which still maintains, was considered by the Royal Commission on Metropolitan Sewage Discharge (1884) the weakest point in the system. The storm overflows are incapable of dealing with exceptional rainfall during the time of high tide. The new intercepting sewers and provision for storm water now being built will doubtless remedy this evil. Ill fares it with any poor flusher caught by one of these sudden spates if far from a manhole. Warned by the roar of the approaching flood he must wade through the rising water to where a life-rail is fixed across the entrance of some branch sewer. Here, should his Davy lamp happen to get extinguished, he clings for dear life in total darkness until the storm abates. (For details of the sewerage system see Note G and Fig. 1.)

Difficulties arose with the old sewers used as storm reliefs. These only being able to discharge into the river at low tide flooded the surrounding district when a storm occurred at any other time. The inadequate provision made for the removal of this water was emphasised by the great increase of building causing the rainfall to find its way more rapidly into the sewers than before. The Board therefore in 1879 embarked upon additional relief works costing £708,000, and these were completed from time to time as floodings of property showed their need.

Construction of Precipitation Works.

Following soon after the opening of the system in 1864 complaints were made by those navigating the river and by others of the condition of the reaches in the neighbourhood of and below the outfall, which led to a protracted Government inquiry. This inquiry was held in 1869 by the late Sir Robert Rawlinson, but the charges were considered not proven. Complaints still continued to be made, and at last the City Corporation as sanitary authority of the Port of London approached the Home Secretary, resulting in the appointment of a Royal Commission in 1882. This Commission in 1884 reported against the existing practice of turning the crude sewage into the river at Barking and Crossness, with the result that precipitation channels were built over a large area at the outfalls, in which the sludge was thrown down by the addition of 1 grain of proto-sulphate of iron and of 4 grains of lime per gallon of crude sewage. The construction of these works at Barking alone in 1887 cost £473,000. After the effluent had been drawn off, which was done at all states of the tide, the sludge was pumped into tank steamers and taken out to sea to be discharged through the bottom of the vessel by means of specially constructed valves. These works were finally completed at Barking in 1889 and at Crossness in 1891 by the London County Council, who had succeeded the Metropolitan Board of Works in 1888; and the same system continues in use.

Additional Sewers and other Works.

After taking over the responsibility the Council in 1889 appointed the late Sir Benjamin Baker with Sir Alexander Binnie, its engineer, to inquire and report generally on the efficiency of the system, particularly regarding sewage disposal, with a view to the prevention of disease and to freeing the river from pollution. In brief they reported that the general features of the main drainage, they thought, had been unalterably fixed in the past; also that a want of capacity in the main sewers had resulted in floodings during heavy rainfall, at which times the diluted sewage was discharged into the river in the heart of the metropolis. They were of opinion that a certain amount of pollution in the river was inevitable at such times. To remedy this they proposed the construction of additional intercepting sewers on each side of the river with various other works, the whole being estimated at £2,250,000. In regard to the disposal of the sewage it was considered advisable to give the existing precipitation works a fair trial before constructing additional works at the outfalls, seeing that the river for the past 50 years had never been free from sewage pollution, but that practically little inconvenience had occurred. It was, however, thought that, with the growth of the population, the question of carrying the outfalls to a point lower down the river would have to be entertained, but in no case could crude sewage be discharged into the river. (See Note H.) Such portions of this work as were considered of urgent necessity were commenced in 1891, consisting of a new relief sewer in the Isle of Dogs, with additional pumping power at Abbey Mills.

Nothing more was done until 1899, when the Council instructed Sir Alexander Binnie to make a further investigation. He reported that large additional works were urgently required at a probable cost of £3,000,000. This work was put in hand in 1901; much of it is now in use, and the rest, with considerable additional work, is rapidly nearing completion. These works were:—North side: two outfall sewers, Old Ford to Barking; a new middle-level sewer, Paddington to Old Ford; low-level sewer, Hammersmith to Abbey Mills; extension of original middle-level sewer to Scrubbs-lane, Willesden (Wood-lane on map); and additional pumping machinery at Abbey Mills. South side: low-level outfall sewer, Deptford to Crossness; high-level sewer, Catford (Rushey Green on the map) to Crossness, and low-level sewer, Battersea to Deptford.

In 1903 the serious flooding of many low-lying districts owing to exceptional rainfall, which during the year amounted to 35 inches, again brought this question prominently forward, and though the relief works commenced in 1879, which were to cost some £708,000, had only just been completed, while others were in progress, in 1904 Mr. Maurice Fitzmaurice, C.M.G., who was then chief engineer, advised the Council to undertake further relief works at an estimated cost of £737,000. Some have been completed and others are still progressing.

The new low-level sewer from Hammersmith to Abbey Mills, and the new middle-level sewer from Kilburn to Old Ford, will relieve the old sewers of the normal output from the rapidly growing suburbs in the West and North-west. In addition to this they will intercept by means of weir chambers, placed at points along the route, much of the storm water flowing towards the riverside pumping stations.

The three original intercepting sewers are now increased to five on the north side—that is, a new sewer has been placed between, and parallel to, the high-level and middle-level sewers, and another between the middle-level and low-level sewers. The main and the storm-relief sewers cross these at right angles, and at certain points of junction a weir is placed to distribute the flow in case of heavy rainfall. (Fig. 2.) There are also, at several points of junction of the new system with the old, chambers constructed in which huge penstocks are fixed to divert the flow from one sewer into another for purposes of repair or otherwise as necessity may arise. (Fig. 3.) On the south side there is a new high-level sewer from Rushey Green (Catford), through Lee, Blackheath, Charlton, and Woolwich, across Plumstead Marshes, to the outfall at Crossness. Another low-level sewer is projected from Wandsworth.

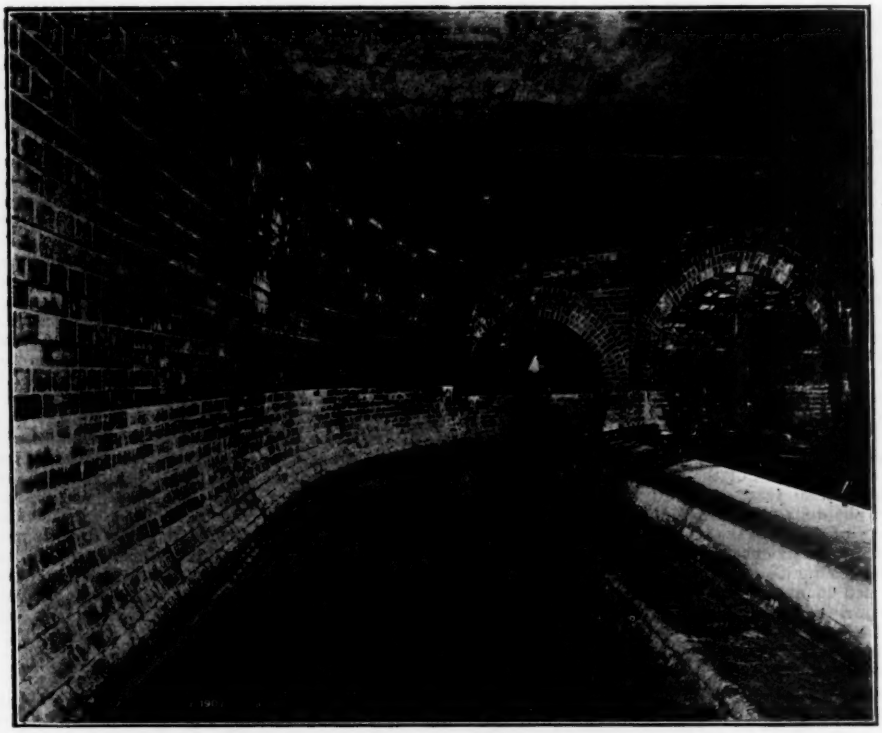
Difficulties Overcome.—Some Suggested Additions.

Much of this work is in districts abounding still in water, while water, electric, gas, telegraph, telephone, and other mains, as well as tube railways, have to be cared for. Then there are the varying levels of parts that have finally to coalesce, while many of the sewers are of the size of the tube railways themselves and of similar construction. To have overcome these and many other difficulties in such an extended and busy area with so little inconvenience to the public calls for our warmest admiration. It would, however, have been a welcome addition if a well-ventilated subway at a convenient depth over the course of the intercepting sewers had been added, as has been done at Aldwych. Not only would this afford ready access by manholes to any part of the sewer, but it would relieve the too frequent congestion of the streets consequent on the repairs of the numerous mains. In addition, a pneumatic tube might be laid for the conveyance of letters between the district post offices, and the rentals paid by the various bodies using this tube would probably yield a modest return on the outlay.

Public Health Questions.

On the question of the final disposal of the sewage it may be gathered from the various reports of the engineers that the existing system can only be accepted as a compromise. With this every thoughtful man must agree. No people

FIG. 2.



Weir chamber in storm relief sewers.

FIG. 3.

Penstocks for diverting flow from one sewer to another.

have a right to pollute the pure waters of any river. Ruskin, in "A Crown of Wild Olives," on noticing this being done at the springs of the Wandle at Carshalton and Beddington, says: "I have never seen anything so ghastly in its inner tragic meaning ..... as the slow stealing of reckless, indolent, animal neglect over the sweetness of that English scene ..... than the insolent defiling of those streams by the human herds that drink of them." Speaking of the inhabitants he adds: "They have neither energy to cart it away nor decency enough to dig it into the ground, thus shed into the stream to diffuse what venom of it will float and melt far away in all places where God meant those waters to bring joy and health." It is certainly a primitive if not a barbarous expedient, though its avoidance is hedged about with difficulties. It may be taken as an axiom, however, that no outrage against any scheme of Nature is for long committed without a penalty.

How far sewage pollution affects the wholesomeness of fish drawn from a source subjected to such influence there has been, until quite recently, no definite record, saving in the case of oysters, mussels, and cockles, but it is well known that many people are unable to eat certain kinds of fish without considerable gastric disturbance. Some kinds of fish are notoriously dirty feeders. Suspicion has within the last few years fallen upon certain kinds of flat-fish—plaice, dabs, and flounders—the young of which frequent the shallow waters of the estuaries, where they feed upon shell-fish. Last year, owing to the character of an outbreak of typhoid fever at Bethnal Green and other of the poorer districts of London, the matter was made the subject of a more than usually exhaustive inquiry by the medical officers of the London County Council. The whole question is fully reported in an official publication by Sir Shirley Murphy, medical officer of health of the London County Council, which includes a report by Dr. W. H. Hamer on certain localised prevalences of typhoid fever in London in 1910. The association of a shortage in supply of small flat-fish at Billingsgate with a drop in the returns of typhoid cases is a significant matter, there being little sale for this fish when the price exceeds ½*d.* per pound. Owing to the hard nature of the food of these fish the usual practice may be omitted of gutting shortly after the catch. These small plaice are principally retailed as fried fish in the poorer districts, and if the cleaning is either omitted altogether by vendors or is carelessly performed the danger is obvious. The suspected supplies are chiefly derived from the northern grounds off the German coast, but they may come from other similar sources. The outbreaks of typhoid fever between 1908 and 1910 unquestionably originated from sewage pollution first affecting the shell-fish, and afterwards the fish and those who had partaken of them.

For many years ideas were prevalent that London sewage held a considerable manurial value, but such have been long since exploded. Its diluted condition and composite character render the many attempts made to secure the valuable nucleus abortive owing to excessive cost. The experiments of 1893 made at Barking for the bacteriological treatment of the sewage, conducted under the superintendence of Sir A. Binnie both by Mr. W. J. Dibden and afterwards by Dr. F. Clowes, are too well known to our readers to need description. (See London County Council Papers, 246, E. Stanford, Charing Cross, 2*d*.)

The fourth report of the Royal Commission on Sewage Disposal in 1904 furnishes the result of a biological examination of the water in the Thames taken from Barking and Crossness down towards the river mouth. The number of B. coli per cubic centimetre of water varied from 100 to 1000. An improvement was first noticeable at Purfleet 5 miles below Crossness, but not till Mucking was reached—15 miles lower down—was this very marked. Here the number varied from 1 to 10, but 5 miles lower down still (by the Chapman light not far from Leigh) it was only 50 per cent. of this amount.

Sewer Ventilation.

The difficult question of ventilation in this maze of sewers still leaves something to be desired. An ideal treatment would be a gradual and progressive purification from the moment the refuse enters the sewers, but the conditions present during its long passage to the outfall are such as to encourage putrefaction than rather to retard it. This is largely owing to the opposition of the public to all attempts made to ventilate the sewers. The absence of such ventilation, on an extended scale, is a principal cause of the nuisance complained of in the neighbourhood of the few existing ventilators. Aerating the stream of sewage by blowing into it jets of compressed or oxidated air at intervals during its passage might be of service. For instance, where the stream was sluggish it might serve the twofold purpose of accelerating the flow and of purifying the sewage at the same time. It would be a disappointment, however, if the effect produced was anything like that experienced at times in the neighbourhood of one of the patent sewage injectors when in action, but such questions are for the engineer.

The conditions of the sewers are to a large extent those of a long septic tank, in that much of the solid constituents, through the action of anaerobic bacteria, becomes liquefied and more easily dealt with at the outfall, though when there it will be more evil-smelling than when it entered the sewer. Mr. W. J. Dibden carried out some experiments at Barking with a view to improving the condition of the sewage by the injection of air with somewhat favourable results. Though the cost incurred did not warrant its application on a large scale, yet it might prove worthy of a trial in the sewers before putrefaction had commenced. Oxidation would arrest this process, but it is possible that the solid portions might be precipitated, in which case the flow, owing to the slight fall in the sewers, would not be sufficient to carry the sediment to the outfall. Against this possibility the idea of the injection of air as an aid to liquefaction of sewage was tried as far back as 1865 by Mr. Mechi at a sewage farm at Tiptree in Essex. The whole of the manure from certain stockyards was collected in an open septic tank holding 80,000 gallons; this was diluted with a definite proportion of water, and air was intermittently forced into the tank. Any kind of offal, including dead animals, was thrown in, and the whole fermenting mass quickly liquefied so that it could be pumped on to the land. The questions arising out of such processes can only be determined by those having practical experience.

Sewage Disposal a Serious Problem.

The principal lesson to be learned from all that has been set out is one of warning from the condition of London and the river in the middle of the last century. What are the conditions to-day? Large quantities of diluted sewage are still, in times of heavy rainfall, discharged into the stream in the heart of London. A combined total of 283,458,950 gallons of chemically treated liquid sewage is on an average turned into the Thames daily at Barking and Crossness, with the addition of from 7000 to 8000 tons of filth (sludge) which is daily carried out to sea. Think of it! The mind fails to form a just estimate of this huge polluted volume. London is, from its size, perforce the worst offender, but all round the coast, in our growing towns, in our health resorts, the same thing goes on, especially in our large cities situated on estuaries. For instance, to name a few:—

Belfast.—Six-sevenths of its crude sewage is discharged into the Lough.

Birkenhead and Liverpool.—The crude sewage is discharged at all states of the tide in the Mersey.

Bristol.—The bulk of the untreated sewage is discharged into the Avon at low tide.

Dublin.—The effluent from the precipitated sewage is turned into Dublin's beautiful bay.

Glasgow.—The effluent of the precipitated sewage is discharged into the Clyde at Dalmarnock and Dalmuir.

Hull.—The crude sewage is pumped into the Humber.

Southampton.—The sewage after partial subsidence is turned into the River Itchen on the ebb-tide.

In these towns alone in 1901 there was an aggregate population of 2,732,091. Surely such a condition of things cannot go on indefinitely, especially in view of the recent evidence of the effect produced by sewage-fed fish. Other fish than those caught in the North Sea form an article of diet. Many parts of our coast have been renowned for the flat-fish frequenting the bays and estuarian waters. Such facts as the foregoing demand serious consideration.

We conclude by expressing our best thanks for the courtesy shown us in this inquiry by the several officers of the London County Council to whom appeal has been made for information. Free use has been made of the published official reports connected with the main drainage of London, especially a very concise digest by the chief engineer, Mr. Maurice Fitzmaurice, while many well-known works of the past have been laid under contribution. Mr. Worth, the district engineer, kindly made arrangements for our representative to inspect the various works of the main drainage system. We also have to acknowledge the use of the

photograph for Fig. 3, lent by one of the contractors, Messrs. Griffiths and Co., of London Wall.

NOTES.

NOTE A. *The continual raising of the level of the ground.*—At the construction of the Victoria Embankment and the District Railway (1862-1870) the late Sir Benjamin Baker, the engineer of the railway, contributed some interesting records which confirm this view. At the City end as much as 24 feet of dust and ruins of ancient buildings were cut through; this varied in depth, but at Westminster it was 13 feet thick. At a depth of 8 to 16 feet below the present surface of the roadway a layer of peat was found 700 feet long and from 2 to 7 feet thick; also at Victoria Station a similar layer 200 feet long and 3 feet thick was met with at a depth of from 9 to 24 feet below the surface.

In making the excavations the gravel was generally found fairly dry to about the depth of the inverts of the adjoining sewers, but below that level large volumes of water existed.

Also in digging for the low-level sewer in the neighbourhood of West Ham peat was met with 12 to 14 feet thick, containing the remains of an ancient forest. This consisted of the stems of trees from 12 to 18 inches thick, having their roots in the clay. Below this layer was the old river gravel. Some leaden coffins were also found in West Ham Marsh.

NOTE B. *The former extent of the Thames at Westminster, &c.*—In an official record dated 1678 Sir C. Wren proposed important improvements in regard to "Ye new Sewers and Ye Backwater in St. Margaret's, Westminster"; and it is also well known that Birdcage Walk in St. James's Park had to be drained before constructing the aviary erected there for Charles II.'s pleasure. Stow, quoting Fitzstephen, refers to this backwater; he mentions a bridge near Whitehall over the Long ditch, "so called for that the same insulateth the City of Westminster." The late Rev. W. J. Loftie thought that "there is little doubt that in the days of Edward the Confessor there was a ford from Westminster to Lambeth." The water spreading over such a large tract of land about this point, it could not have been of any great depth. The ford would occupy the position of the old Horse-ferry; possibly Hungerford indicates a similar crossing.

It would have been much the same on the Lea. The water of the estuary, spreading over parts of Poplar and Canning Town as it did, would have made the lower reach by Stratford and Old Ford far more shallow than at present. This dangerous ford was superseded by the construction of the stone three-span bridge receiving the name of "the Bow" a short distance below the ford, built by Queen Maud, wife of Henry I. It was rebuilt in 1840. There might have been a ford across the Ravensbourne at Deptford, but this place gained its name from the Danes, being the deep fiord in which they anchored their ships when on the watch for plunder.

NOTE C. *Occurrence of floods.*—In 1236 the Thames overflowed, making Woolwich Marshes like a sea. Very many people were drowned, and much damage was done, Westminster Hall being flooded and people going into the Hall in boats. The same occurred in 1242, the river overflowing Lambeth hithe for a space of six miles, drowning many people and destroying houses and property.

Well on into the eighteenth century the Marshes left round Bermondsey, Lambeth, and St. George's Fields were uninhabited, save for the dwellers in a few squalid huts, some built on piles after the manner of lake dwellings.

NOTE D. *The Fleet River.*—The state of the Fleet River, as described by Swift in his "City Shower" about the middle of the eighteenth century, bears testimony to the little regard paid to enactments and to the neglected condition of the streets and water-ways at this time:—

> "Now from all parts the swelling kennels flow,
> To bear their trophies with them as they go;
> . . . .
> And in huge confluence joined at Snowhill ridge
> Fall from the conduit prone to Holborn Bridge;
> Sweepings from butchers' stalls, dung, guts, and blood,
> Drowned puppies, stinking sprats, all drenched in mud,
> Dead cats and turnip tops, come tumbling down the flood."

The more polished if less expressive line of Pope in the Dunciad bears a like testimony.

The Fleet, also called the River of the Wells, had its rise on the eastern side of Hampstead, and as a sewer has been diverted from its original course to drain Camden Town; then making its way through St. Pancras, it was joined farther on by a small branch from Clerkenwell. Reaching the Holborn Valley it absorbed the waters of the old Bourne, having its rise in Middle Row, and then by way of Farringdon-street into the Thames.

The main portion of the river was converted into a sewer in 1732 with the exception of a few sections, including one near the outlet, which last, at the building of Blackfriars-bridge in 1765, was carried out into the river in a culvert 18 feet wide and 12 feet high. The river was at one time navigable for some distance. As a sewer it drained a district covering an area of 14 square miles.

NOTE E. *Bermondsey.*—A description of this district is given by Dickens in "Oliver Twist," under the name of Jacob's Island.

NOTE F. *Details of the sewerage system: The outfall sewers.*—On the *north side* these outfall sewers run from Old Ford to Barking (see map), each measuring 9 feet over. They are connected with the high and mid-level intercepting sewers at Old Ford by gravitation, the contents of the low-level intercepting sewer being pumped into them lower down at Abbey Mills.

On the *north side* the high-level sewer commences at Hampstead, keeping on the higher ground as far as Stamford Hill, falling the whole way by gravitation through Clapton and Hackney to Old Ford; its length to this point, including branches, is 7 miles. It has a sharp fall of 50 feet or more to the mile at its commencement, which diminishes to 4 feet only near its termination, and is laid at a depth of from 20 to 26 feet, draining an area of about 8¼ square miles. It commences as a 4 ft. barrel, and is 9 ft 6 in. by 12 ft. at its completion.

The mid-level sewer is laid at a depth of from 30 to 40 feet owing to its position on the lower slope of the hill; it measures 4 ft. 6 in. by 3 ft., increasing to a 9 ft. 6 in. by 12 ft. sewer on completion, and with branches it is about 13 miles long. Starting from Kensal Green it passes through Bayswater and along Oxford-street, where, near the British Museum, it receives a branch from Piccadilly; then by way of Old-street and Bethnal Green it goes to Old Ford, with a fall varying from 17½ to 2 feet per mile. It drains an area of 16¾ square miles. This is also a gravitation sewer.

The low-level sewer, with branches, is about 21 miles, increasing from 4 feet by 2 ft. 8 in. to a 10 ft. 3 in. barrel. Commencing at Chiswick, and passing through Walham Green, it receives a branch from Fulham and gravitates to a pumping station at Pimlico, where it is raised 18 feet; it is continued by the side of the river along the Embankment, through Limehouse, receiving branches from Hackney and the Isle of Dogs, Bow, and Bromley; it reaches Abbey Mills pumping station, where it is raised another 36 feet into the northern outfall on its way from Old Ford to Barking. It drains an area of 24 square miles.

On the south side the outfalls measure some 11 feet to 12 feet over-running from Deptford to Crossness. At Deptford the sewage from the low-level sewer is pumped up 18 feet into them. The other intercepting sewers connect to the outfalls by gravitation with the exception of the new sewer from Catford (Rushey Green on map), which runs by gravitation directly to Crossness, where it is lifted into the reservoir for treatment before discharging it into the river.

The sewage on the south side of the Thames is dealt with as follows:—The low-level sewer, 10¼ miles in length, starts in Putney with a 4 ft. by 2 ft. 8 in. sewer; keeping near the river, it passes through Wandsworth and Battersea to Vauxhall. It then runs near the Oval, Kennington, and turns in Camberwell New-road north-east, passing Walworth, near Albany-road, to the Old Kent road, from thence to New Cross and Deptford, where it passes into the pumping station by a 7 ft. by 7 ft. sewer. On its way it is joined by the Bermondsey branch sewer, 2¾ miles in length, the total area drained being 15½ square miles. The size of this branch sewer is a 5 ft. 6 in. barrel, and terminates at the pumping station in a 7 ft. by 7 ft. sewer.

At Deptford the sewage is lifted to a height of 18 feet, and discharges into two outfall sewers, each about 7½ miles long, and 11 feet 6 inches diameter, with a fall of 2 feet per mile. After taking various branch sewers in Greenwich, Woolwich, Plumstead, &c., these sewers discharge at Crossness, where the sewage is lifted some 20 feet by four beams and two vertical engines and pumps into precipitation channels, where it receives chemical treatment. The effluent eventually discharges over a wear into the Thames.

The southern high-level sewer commences at Balham in a 4 ft. by 2 ft. 8 in. sewer, it runs along Balham High-road to Clapham-road, where it increases in size to 4 ft. 6 in. by 3 ft. At this point it is joined by the Putney to Clapham extension sewer, commencing at Roehampton-lane as a 4 ft. 6 in. by 3 ft. sewer, and ending in a 9 ft. by 6 ft. sewer. From Landor-road, at its junction with Clapham-road, the combined sewage from the two branches mentioned above is carried in a 5 ft. barrel sewer through Brixton and Camberwell on to Deptford Broadway, where it ends in a 10 ft. 6 in. by 10 ft. 6 in. sewer. Near this point it discharges into the southern outfall sewer already mentioned. The total length of these sewers is 15¼ miles, and the area drained some 8½ square miles.

In addition to these, there is a high-level sewer from Catford, commencing in a 10 ft. barrel, increasing in size to a 11 ft. 6 in. barrel, which passes along Blackheath, Charlton, Woolwich, Plumstead, and thence in embankment to Crossness, where it discharges direct into the precipitation channels without the necessity of pumping, and is treated along with the other sewage already mentioned.

Other sewers known as the Effra branches, 7¼ miles in length, start from the Crown Hill and the Crystal Palace, and commencing in 4 ft. by 2 ft. 8 in. and 3 ft. by 2 ft. sewers respectively. These branch sewers join a 6 ft. barrel sewer in Park-road, West Dulwich, whence it flows through Dulwich and Peckham to New Cross and Deptford, and joins the southern high level sewer near the Broadway, ending in a 10 ft. 6 in. by 10 ft. 6 in. sewer, being connected into the southern outfall sewer, and thence to Crossness.

The total amount of sewage treated at Crossness annually is about 49,000,000,000 gallons, of which 281,000,000 reaches the reservoirs without pumping. 174,000 gallons of sewage can be raised per minute to a height of 20 feet at this pumping station.

The foregoing includes some of the recent additions:—There are 11 pumping stations, five of which are continuously employed in lifting the sewage from one level to another. The total indicated horse-power of these five stations combined is from 5000 to 6000. They are situated as follows (see map): Western pumping station at Pimlico; Abbey Mills; North Woolwich; Deptford; Crossness. The Western and North Woolwich stations can also be used for pumping storm water directly into the river. In addition to the above there are six other stations for discharging storm water into the river situated as follows (see map): Lots-road, Chelsea; King's Scholar's Pond, North west of Vauxhall Bridge; the Isle of Dogs; Falcon Brook, Vauxhall; Heathwall, Nine Elms; and Shad Thames. With the exception of the Isle of Dogs station, the motive power is gas, the total indicated being 4000 to 5000 horse-power.

NOTE H. *Treatment of sewage.*—The London County Council, with a view to future necessities, has secured some 500 or 600 acres of land in the neighbourhood of the outfalls, to enable it to further develop the present system of treatment, though such treatment would do little more than keep pace with the increase of the population and keep matters at their present level. The storm overflows, however, continue to deliver diluted sewage into the river in the heart of London.

WORTHING HOSPITAL.—In spite of the very strong appeal that was made last year for increased subscriptions, the accounts of the Worthing Hospital, it was stated at the annual meeting on August 25th, showed a deficit of £267, or only £9 less than in the previous year. This is considered very disappointing, particularly as with the opening of the new out-patients' department, which is in course of erection, the expenses must necessarily increase. Unless the institution receives a good deal more support the position will become exceedingly serious. The number of in-patients during the year increased to 312 from 278 the year before, and the out-patients showed a slight decrease, this being probably due to the stricter inquiry that was made into the circumstances of applicants.

THE INTERNATIONAL EXHIBITION OF HYGIENE AT DRESDEN.

BY FLEET-SURGEON W. E. HOME, R.N.[1]

(*Concluded from p. 548.*)

THE popular section of this exhibition, albeit so extensive and so carefully planned, is after all but a tiny part of the magnificent whole. The other sections and the pavilions of foreign nations were too many and too vast for me to visit them all in the few days I had. And of the exhibits one did admire one can only mention here a very few. A book recounting the recent advances in medicine, and apparently prepared by the Prussian Government for this exhibition, was attached to tables by a chain, and was everywhere in evidence. Each had a thick marker fixed in it, inclining it to open on the smallest provocation at the page which explained the neighbouring exhibits. I had been honoured a year ago by being asked to join the committee of the Naval and Military division, so after looking at the English Section, which owes so much to the indefatigable work of Mr. H. W. and Mrs. Armit, I went over to that division first.

Naval and Military Division.

The exhibits were most interesting and were attractively displayed in large halls. There was a section of the sick bay of a German battleship, very nice and light, the only wood used being the side pieces of the beds; the cabin of a fleet-surgeon, with neat little racks for his service books, and a mosquito-net diaphragm to fit in the window to keep out mosquitoes and prevent malaria. Perhaps the most surprising exhibit here was one in the Army Section indicating that there had been some anxiety about the frequency of tetanus after gunshot wounds. Investigations were made, and it occurred to somebody to examine the felt used as a wad over the explosive in the rifle cartridge; tetanus bacilli were found in it, and thereafter the felt was sterilised before the wads were cut. Could the principles of the Red Cross be more faithfully observed? There is a great Red Cross display, and Russia and Japan also show Red Cross exhibits.

Infectious Diseases.

Here is the pavilion of infectious diseases. It begins with a model of the Institute for the Study of Infectious Diseases in Berlin, with its many stables for beasts and runs for poultry; next there is a bacteriological laboratory equipment, with cages for small animals, various incubators and sterilisers, and apparatus for making culture media and preparing serums. Then follow animal plagues—e.g., swine fever; a picture of a sick pig, the methods of taking blood for examination, protective inoculation and the withdrawal of the protective serum (from the distal end of the caudal appendage), post-mortem appearances, and the microscopic pathology. The insects which convey diseases are displayed—the tiny glossina palpalis and the various ticks, and next, two rooms of bacterial and blood investigations. There is a large picture on the wall showing a man with hay fever; beside it the rye whose pollen is the most virulent cause of the disease (1-30,000th of a grain an effective dose). The swelling and vascular dilatation produced on an arm by subcutaneous injection are also pictured. Here is a collection of the cellular proteins of particular bacilli, shown by the University of Michigan; also the arrangements required for growing the bacilli in the huge quantities necessary. My attention was arrested by a bottle containing a tablespoonful of "the proteid poison from white of egg," which I had hitherto credited with but a doubtful objective existence. In the "immunity" room was an opsonin laboratory, and exhibits explaining the Wassermann reaction and salvarsan, and the applications of the deviation of complement to medico-legal work.

Cholera, plague, typhoid fever, and various other of the epidemic diseases have each a room, with maps to show the distribution and diagrams of the course of individual epidemics; the bacillus, in picture and in many cultures, and the lesions are also shown. I must mention the great collection of rodents, carriers of plague, shown by the Health Institute of Hamburg—rats, ground squirrel, wood rat, tarabagan—repeated to some extent in both the Japanese and English sections. In the small-pox room is a chart to show that of the few cases that did appear in Germany in the last few years, one quarter occurred in visitors from other countries; and another graphically displays that England and Belgium, which do not revaccinate systematically, have not really lost small-pox as have Sweden, Norway, Denmark, and Germany, which do.

Tropical Diseases.

The Section of Tropical Diseases was full of instruction. The malarial parasites, under the microscope and in pictures, in the blood and in course of development in the mosquito, were most copiously illustrated; also the prevention of malaria by curtains, boots, gloves, helmets. The fall of malaria in Italy since the serving out of quinine began is shown, and a similar curve appears in the Hungarian Section. Intestinal parasites and their development are exhibited; also the Leishman-Donovan bodies and sleeping sickness, its clinical and laboratory pathology, its epidemiology, and prevention are demonstrated. The whole exhibit, so complete and so clearly arranged, does credit to its president, Professor Nocht, and his able assistants in the Hamburg School of Tropical Medicine. There are, too, models of hospitals in the tropics, and the very attractive exhibit of the Wellcome Laboratories at Khartoum must on no account be missed.

Statistics of the World.

There is a room in which are displayed the statistics of the world. One could not say how far the figures noted were rigidly comparable, but from the curves which are shown deaths from tuberculosis appear to have decreased in the last 30 years most in Prussia, then in the German Empire, in Denmark, England, and Scotland; little improvement is noted in Ireland, Austria, or France. Here also are diagrams showing from the figures of the latest available census the distribution with regard to age and sex of the populations of many countries. There is a striking increase of the population under 10 in Spain, and a marked upspringing under 20 and under 10 in Bulgaria, Servia, Italy, Japan, and Egypt. This high increase in recent years is less noticeable in England and Scotland, and sadly deficient in South Australia and New Zealand. I am unable to give figures as photographing, sketching, or copying is forbidden in the exhibition. Another rather interesting set of tables mentioned in the catalogue I failed to see. They indicate for various towns the improvement in the vital statistics and the coincident expenditures on their public health services.

Tuberculosis and Venereal Disease.

Near this is the section for the care of the teeth, and beyond that of venereal diseases, with models of barracks which have sometimes been built for prostitutes, as well as a model examination room for them. The effects of venereal disease are shown by charts and wax models, syphilis insontium is also dealt with, how it occurs and may be prevented, and there are quantities of White Cross literature. The public opinion of Germany appears equally concerned in putting down venereal disease and tuberculosis. So great having been Germany's success against small-pox who will deny the possibility of its triumphing over these others also? In a wooden house in the grounds is a "Wandermuseum" of tuberculosis—the travelling caravan exhibits. Their success has been such that Dr. Mollow, in Bulgaria, has copied the idea and used it with great effect against malaria. So far as I can judge, the first principle on which they insist is that where there is no dust there is little danger of infection. The consumptive is taught to be very careful himself, and then they trust to exalt resistance by ensuring good nutrition, by impressing the need for extreme care of the teeth and showing people which are the most nourishing foods. They do not insist, as we do, on the open window, which one German medical officer of health considered impossible because of the rigour of their winter climate.

Other Pavilions.

I can only mention some of the other pavilions: the historical, showing the hygiene of Assyrians, Jews, Romans,

[1] The first section of this article was also written by Fleet-Surgeon Home.

and savage nations, is delightful; housing—warming of buildings and lighting, laundry machinery, furniture, basins and baths of all sorts, ventilation apparatus; rescue arrangements against drowning and accidents in mines; transport, including one of the wagons seen on German railways for carrying living fish in tanks; industrial diseases, with the clothing and exhaust fans employed to prevent anthrax; workmen's insurance, showing in great detail the working of the insurance laws; model dwellings—in this pavilion I was much struck by the compactness and small size of the German cooking stove.

Of the pavilions of other nations the Chinese is the most ornamental; the quantity of lacquer that met the eye had a sumptuous effect, and the beauty of the embroideries, that subserved the great cause of hygiene because they were bed-quilts, was most marked. Here was the famous soya bean with the old sauce, soy, and milk, oil, biscuits, jam, Italian pastes, and a cheese all made out of it. The Russian pavilion is the largest. Here, as in the French pavilion, great stress is laid on vaccination. The Hungarian Section is strong on the care of children. There is in the centre a great relief model of Hungary which shows the trouble they must have with malaria. The colour scheme and patterns of decoration have the beauty and individuality that anyone would expect who had ever been in Budapest. Fuji dominates as one enters the Japanese pavilion. Vaccination again is prominently set forth, and the cause and management of beri-beri. The foods of the nation are shown (1) as grown; (2) as in trade; and (3) as cooked, in little dishes. The work done by children in the schools is shown and there are two beautiful cases of their toys. The Austrian section is large and notable for its many rooms, each displaying the sanitary equipment or curative advantages of a single town. The city of Amsterdam is brave enough to be responsible for a single but admirable pavilion; its best exhibit is in the statistical room of the general exhibition.

The English Section.

The English section is in a different position altogether from the others, which are established by their respective Governments, while ours had to depend on private subscription. It is full of instructive exhibits, which have severely taxed the skill of Mr. Armit to display in the limited space available; but he has succeeded magnificently, and is making the collection all the more useful by his daily lecture at 3 P.M. The invaluable assistance he has had from Mrs. Armit was recognised by Professor Dr. Renk, the second president of the exhibition, when publicly opening the section. Their only other assistant is Miss Wright, who has come to demonstrate the Marylebone Dispensary's exhibit of its methods for the protection of infant life. The section, thanks to the help of the Board of Education, is very strong on the school side. Tropical medicine is particularly well shown, and the case of wax models of cancer, syphilis, and skin diseases, shown by Dr. G. Stopford Taylor and Dr. R. W. McKenna of Liverpool, attracts so much attention that brass rails were being put round it when I left to keep the glass from being always broken by people leaning on it.

In conclusion, I can only add, in case anyone fears that the sight-seeing would be altogether too strenuous, that quiet rooms may be hired, behind the Japanese pavilion, for 1*s.* an hour of an afternoon, and a long chair on the grass for 6*d.*, which things show a deal of consideration on the part of the administration, and give the sightseer an opportunity to reflect peaceably on the wonders seen.

THE BRITISH MEDICAL MAN ABROAD.

(*Concluded from page 657.*)

CANADA.

THE possession of British diplomas and degrees will in many cases entitle the holders to practise in Canada after having obtained a licence from the provincial medical boards and paid certain fees. It is hoped that a general principle of reciprocity will soon prevail.

Ontario.—Registration by the Council of the College of Physicians and Surgeons of Ontario is necessary, and it is optional for the Council to admit to registration all persons who are duly authorised to practise medicine, surgery, and midwifery in the United Kingdom and Ireland upon terms which the Council may deep expedient. The British medical man desiring to practise in Ontario should make full inquiries and ascertain his exact position beforehand, or he may be sadly disappointed.

Quebec.—Practitioners must be licensed and registered by the Provincial Board, which may license without examination holders of medical qualifications from British universities or corporations.

New Brunswick.—Practitioners in New Brunswick must be registered by the Medical Council of the province. A candidate for registration (1) must pass an examination in English, arithmetic, algebra, geometry, Latin, elementary mechanics, elementary chemistry, history, geography, and two of the following languages, Greek, French, and German, unless he has already matriculated at some College in the United Kingdom, Canada, United States of America, or Europe, or holds a first-class teacher's licence from the Board of Education of New Brunswick; (2) he must afterwards have studied for four years and attended some university or college or school of medicine for four sessions of not less than six months each and have attended lectures on anatomy, pharmacy, &c.; (3) he must have attended the general practice of a hospital for 12 months; (4) he must have obtained a degree in the above subjects from a university, college, or school requiring such four years' course of study or must have passed an examination in them before the examiners in New Brunswick; and (5) he must be over 21 years of age. Every candidate for registration as a practitioner, whether or not he has a degree or diploma, must pass an examination. A fee of $10 is required and medical practitioners are liable to an annual fee of from $1.

Nova Scotia.—Registration and a licence from the Provincial Medical Board are required, which admits to the privileges of practice, upon payment of the registration fee, all persons who are duly registered by the General Medical Council of Great Britain. The fee is $30.

Prince Edward Island.—No one can practise medicine, surgery, or midwifery in Prince Edward Island unless registered or licensed by the Council of the Medical Society of Prince Edward Island. The Council admits to the register any person who is duly registered by the General Medical Council of Great Britain.

British Columbia—No person may practise medicine, surgery, or midwifery in British Columbia unless registered by the College of Physicians and Surgeons of British Columbia. The Council admits to the register any person "who shall produce from any college or school of medicine and surgery, requiring a four years' course of study, a diploma of qualification," on proof of identification and on passing an examination as to his competency. The fee for registration appears to be rather indefinite, as we learn that it "must not exceed $100." Licences to practise are issued to women.

Manitoba.—Registration by the Council of the College of Physicians and Surgeons of Manitoba is necessary, and applicants for registration must be members of an incorporated medical body in Canada giving similar privileges to persons incorporated in Manitoba. Application should be made to the Council by British medical men desiring to practise in the province. The fee is $75. Licences to practise are issued to women upon the same terms as men.

Alberta.—Medical practitioners must be registered by the Council of the "College of Physicians and Surgeons of the Province of Alberta." The Council admits to the register anyone who (1) produces a diploma of qualification from any college or school of medicine and surgery which exacts for such diplomas attendance on at least a four years' course of lectures of at least six months each; (2) gives proof of identification; (3) passes before them a satisfactory examination appertaining to the profession of medicine and his fitness and capacity to practise medicine, surgery, and midwifery; and (4) pays $50, and another $50 for registration.

Saskatchewan—No one may practise in Saskatchewan unless registered (fee $50) by the Council of the "College of Physicians and Surgeons of the Province of Saskatchewan." The Council admits to the register anyone who produces a diploma of qualification from any college or school of medicine and surgery recognised by the Council, which requires attendance at a four years' course of lectures, and who passes an examination (fee $50) before the Council.

AUSTRALIA.

Legally qualified British medical men can practise in all parts of Australia. Proof of registration by the General

Medical Council of Great Britain must be submitted to the medical board of the particular State selected when a certificate to practise is granted. The medical man with British qualifications who desires to practise in Australia must communicate with the medical board as soon as he intends to settle, so that he may regularise his position from the beginning.

NEW ZEALAND.

Registration in the colony of New Zealand is obtained by the legally qualified British practitioner on producing his proof of registration by the General Medical Council of Great Britain and on paying a fee of £1 5*s*.

BRITISH SOUTH AFRICA.

The position of the legally qualified British practitioner in South Africa is much the same whichever colony he proposes to practise in.

Cape Colony.—No person may practise in Cape Colony as a medical practitioner without a licence signed by the Colonial Secretary of the province and the recommendation of the Colonial Medical Council is required. The fee for the licence is £5 and women are eligible for the licence. Applications should be made to the Colonial Medical Council at Cape Town.

Natal.—Here also application for a licence to practise medicine in the colony must be made to the Colonial Secretary of the province. The application will be granted upon the approval of the Natal Medical Council.

Southern Rhodesia.—The admission fee for the practice of medicine in Rhodesia is £5, and application for the licence should be made to the Chief Secretary, Salisbury, Rhodesia. It would be well also to write to the Secretary of the British South Africa Company, London Wall, E.C. In *North-Western Rhodesia* the fee is also £5.

Transvaal and the Orange River Colony.—The Transvaal Medical Council (Pretoria) and the Medical and Pharmacy Council of the Orange River Colony, Bloemfontein, grant a licence to practise on payment of £10 and £7 10*s*. respectively. Proof of registration by the General Medical Council of Great Britain must be supplied.

THE COLONIAL MEDICAL SERVICE.

In the following Colonies and Protectorates there are medical departments regulated from the Colonial Office:—British Guiana, Jamaica, Trinidad, Windward Islands, Leeward Islands, British Honduras, Fiji, Sierra Leone, Gambia, Gold Coast, Northern and Southern Nigeria, East Africa and Uganda Protectorates, Nyasaland, Somaliland, Ceylon, Straits Settlements, the Federated Malay States, Hong-Kong, Mauritius, Seychelles, Cyprus, Gibraltar, St. Helena, and the Falkland Islands. In Ceylon, Jamaica, and Mauritius vacancies are almost always filled locally by the appointment of qualified native candidates. As a rule, officers are required on appointment to undergo a three months' course of instruction at the London or Liverpool School of Tropical Medicine, and to obtain a certificate of proficiency before taking up their appointment. It is for the East and West African Colonies and Protectorates that medical officers are chiefly required. The majority of the West Indian appointments involve medical charge of a district, including, as a rule, the care of a hospital, poor-house, asylum, or other institution, and free attendance on the aged and children. Passage money on first appointment, and leave of absence on half-pay (in addition to the ordinary annual vacation on full-pay, not exceeding three months in two years), are granted only in the cases specified in the Colonial Regulations. Leave on half-pay is not granted before the completion of six years' service, except on the ground of illness or urgent private affairs. With regard to pension, medical officers are usually on the same footing as other Government servants; but in cases where private practice is allowed the rule is that they are not usually entitled to pension. In Ceylon, Straits Settlements, the Federated Malay States, Hong-Kong, and Mauritius all permanent Government servants are called upon to contribute 4 per cent. of their salaries towards the pensions of the widows and orphans of public officers.

British Guiana.—There are 40 appointments. Candidates must have held for at least six months a resident medical appointment in some public institution. Officers are appointed on two years' probation as assistant medical officers, and are paid a salary at the rate of £300 per annum with quarters, without the right to private practice. The permanent staff, to which officers may be appointed at the expiration of the probationary period, include the following appointments: Surgeon-general, £900, with travelling expenses and consulting practice; medical inspector, £800, with travelling expenses and private practice; 3 medical officers at £600 to £700; 10 medical officers at £560 to £600; 11 medical officers at £400 to £500; and 3 medical officers at £400. Medical officers appointed to districts receive travelling allowances varying with the nature of the district. They are also allowed private practice. Medical officers attached to public institutions are, in general, allowed free quarters. A deduction of 4 per cent. is made from their salaries for the payment of the premiums on an insurance of the officer's life for the benefit of his widow or orphans. The Governor has the power to appoint private practitioners to perform the duties of medical districts on temporary agreements, and in recent cases vacant appointments have been filled in this way, but it is not proposed to make such appointments in future.

Jamaica.—The appointments number 54 and are mainly district appointments, private practice being allowed; the salary paid by Government varies from £100 to £250 per annum. Newcomers are in some cases attached for a while to the public hospital in Kingston and given an allowance at the rate of £200 per annum, but not permitted to undertake private practice. Some medical officers receive a varying capitation allowance for attendance on immigrants. All medical officers are obliged to subscribe at the rate of 4 per cent. on their salaries towards the pensions of officers' widows and orphans.

Trinidad and Tobago.—In Trinidad and Tobago there are 35 appointments. Under the terms of the Ordinance regulating the medical service officers are appointed in the first instance on two years' probation as supernumeraries. They receive a salary of £250 per annum, with furnished quarters, and are usually attached to the Government hospital; the salary assigned to the district appointments, to which they are promoted as vacancies occur, is £300, which is increased to £400 and upwards by various allowances for horse, house, or otherwise. These posts carry the right to private practice. After every five years' service an officer is given an additional personal allowance at the rate of £50 per annum. All officers are required to contribute 4 per cent. of their salaries for the provision of widows' and orphans' pensions. In a few districts a system has been introduced by which the work is performed by private practitioners under temporary contracts.

Windward Islands (Grenada, St. Lucia, St. Vincent).—The 22 appointments are, with few exceptions, district appointments with the right to private practice attached; the salaries paid by Government vary from £250 to £400, with allowances in certain cases. The Governor has the power to transfer a medical officer from one island to another at his discretion. The appointments are not pensionable.

Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).—The 25 appointments are of the same nature as in the Windward Islands. An officer when first sent out is not appointed to a particular island, but to the service of the Leeward Islands, with a salary of £250, and the Governor decides as to the district which is to be allotted to him. He is liable to be transferred at the Governor's discretion to any medical district in the Leeward Islands, and in certain districts may be required to perform magisterial duties. The medical officers receive fees for successful vaccinations, post-mortem examinations, attendance and giving evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also, as a rule, allowed private practice.

British Honduras.—There are five medical appointments (besides the principal post of colonial surgeon). One of the medical officers is paid $1458 a year, two are also district commissioners and receive $1944 for the combined posts of medical officer and district commissioner, and one receives $750 a year, and is entitled to private practice, but not to pension. Unless they already possess a diploma of public health, medical officers are liable to be required before they join the colony to undergo a course of instruction at a laboratory of public health or analogous institution. The dollar equals about 4*s*. 2*d*.

Fiji.—The Government medial officers receive a salary of

£300, rising by annual increments of £25 to £500, with free quarters, or a house allowance of £50. In some districts a medical officer is also a magistrate with a combined salary of £500, rising to £600. They are allowed private practice, so far as is consistent with the proper discharge of their duty to the Government, but in most districts the private practice is very small. They are required either to take charge of hospitals or of districts, at the discretion of the authorities. The posts are pensionable. There are at present 15 medical officers, in addition to a chief medical officer (£700 a year, rising to £800).

Ceylon.—The principal civil medical officer receives £1250, rising by annual increments of £50 to £1400 per annum. There are an assistant principal civil medical officer on £750 by annual increments of £50 to £850, and a medical superintendent of lunatic asylum on £600–£800. The registrar of the Medical College, Colombo, and the director of the Bacteriological Institute receives £450–£600; the medical superintendent of the General Hospital, Colombo, £600–£800. There are nine provincial surgeons (Rs. 6000–Rs 8400), 30 first grade medical officers (Rs. 3600–Rs. 5400), 34 second grade (Rs. 1800–Rs. 3000), and 70 third grade (Rs. 1200–Rs. 1800). Private practice is allowed to the subordinate officers, but the colonial surgeons may take only consultation practice. The medical service of Ceylon is mainly recruited from among gentlemen born in the island, but possessing British diplomas.

Straits Settlements.—Two house surgeons in the General Hospital, Singapore, and two in the General Hospital, Penang, on £300, with free quarters. There are about 20 subordinate posts in the medical department, with salaries varying from £300 (rising to £360) to £780 (rising to £900). Some of these posts have free quarters attached, and the holders of some are allowed private practice within limits. The salary of the principal civil medical officer is £1000.

Federated Malay States—Appointments are graded as follows: Principal medical officer, £1200; senior medical officer, Perak, £900, by annual increments of £20 to £1020; senior medical officer, Selangor, £780, by annual increments of £20 to £900; eight medical officers, Grade I., £600, by £20 annually to £720, with free unfurnished quarters; 13 medical officers, Grade II., £420, by £15 annually to £600, with free unfurnished quarters; house surgeons £300, rising to £420, with free furnished quarters without private practice. A medical officer is attached to the regiment of Malay States Guides, his salary being £360 to £480. The two senior medical officers and the two Grade I. medical officers in charge of Negri Sembilan and Pahang are allowed consulting practice only. Other medical officers are prohibited from private practice except in very special cases where the Resident General is satisfied that, owing to the absence of private practitioners, it is absolutely necessary to allow the Government medical officer to attend to private patients. The posts of medical officer, Grade II., in the Federated Malay States and the corresponding appointments in the Straits Settlements are filled by the promotion of officers who have entered the service as house surgeons.

Hong-Kong.—Principal civil medical officer, £800, rising to £1000. There are five medical officers, two health officers of the Port, and two medical officers of health, with salaries of £480 rising to £720. Most of these appointments are pensionable. Private practice is not allowed, and free quarters are only given in a few cases. The Government bacteriologist receives £480, rising to £720; and his assistant, £360, rising to £420. In Hong-Kong, officers whose salaries are fixed in sterling are paid locally in dollars, at a rate of exchange fixed monthly by the Government and based on the average exchange value of the dollar during the preceding month. When, however, the average exchange value for the month exceeds 2*s.*, sterling salaries are converted at 2*s.* to the dollar. In the Straits Settlements and Federated Malay States sterling salaries are converted at the Government rate of exchange, which is at present 2*s.* 4*d.* to the dollar. Vacancies in Hong-Kong are almost invariably filled by promotion or by transfer from other colonies.

Mauritius.—There is a headquarters staff, consisting of a director (Rs 10,000), an assistant director (Rs. 8000), two sanitary wardens (Rs. 6000), one assistant sanitary warden (Rs. 5000), an assistant medical officer, Port Louis (Rs. 5000), a police and prisons surgeon (Rs. 6000), and a health officer (Rs. 5000). There is also a medical inspector attached to the Immigration Department. In the rural districts there are various medical officers, most of whom receive Rs. 6000 a year and are not allowed private practice. Free quarters are not given in most cases. The service is mainly recruited locally. Officers in the service of Mauritius are required annually to contribute 2 per cent. of their salaries towards their pensions.

Seychelles.—There are four medical appointments. The Government medical officer receives Rs. 4500. The assistant Government medical officers receive Rs. 3000. The holders of these latter appointments have free quarters. Private practice is allowed.

Gibraltar.—There is a surgeon of the Colonial Hospital receiving £275, £55 as medical officer of the civil prison and lunatic asylum, and horse allowance of £42, with private practice. There is also an assistant surgeon with a salary of £300 per annum, but without private practice, who is police surgeon, port surgeon, and surgeon to the Port Office without additional emoluments.

Cyprus.—There is a chief medical officer paid at the rate of £500 per annum, and three district medical officers paid at the rate of £275 per annum, all enjoying private practice (except the chief medical officer, who is allowed consulting practice only) and receiving 2*s.* per diem forage allowance; these are the only medical appointments in the island which are open to English candidates.

St. Helena.—The colonial surgeon at present receives £270 per annum, and £27 horse allowance. Private practice is allowed.

Falkland Islands.—There are two appointments, one of which is paid at the rate of £300 per annum, with £25 as health officer, and the other at the rate of £200 per annum, with £36 as deputy postmaster. The holder of the latter post is required to enter into an agreement with the West Falkland Medical Association, in accordance with which he renders professional services to the members of the association and their families, their employés, and their families, in return for £200 a year and certain payments by the employés. Private practice is allowed to both officers.

East Africa, Uganda, Nyasaland, and Somaliland Protectorates.—The salary of a medical officer on the permanent establishment in these Protectorates is £400 per annum, rising to £500 per annum by annual increments of £20. There are 14 appointments of this rank in the East Africa Protectorate, 11 in Uganda, seven in Nyasaland, and two in Somaliland. In the East Africa Protectorate there are certain special appointments—viz., a medical officer of health at Mombasa (£500 by £20 to £600) and two senior medical officers (£500 by £20 to £600). The salary attached to the appointment of principal medical officer in the East Africa Protectorate and in Uganda is £750 per annum, rising to £850 per annum by annual increments of £25, and £500 per annum, rising to £600 per annum by annual increments of £25, in the case of Nyasaland. Medical officers are permitted to take private practice on the understanding that they give precedence to their official duties. Free passages are provided to the Protectorates. Under the leave regulations officers are entitled to two months' leave on full pay every year, subject to the exigencies of the service, and are allowed to accumulate this leave up to six months—i.e., medical officers of the East Africa, Uganda, and Somaliland Protectorates who remain at their posts without intermission for 20 months are entitled to four months' leave; if for 25 months, to five months' leave; and if for 30 months, to six months' leave, but of such leave the first three months only are on full pay, the remainder being on three-fourths pay. In Nyasaland the amount of leave is the same, but the whole of the accumulated leave is on full pay. A vacancy occurring in the medical staffs of the East African Protectorates is at present usually filled by the absorption of one of the temporary medical officers whose appointments (at a salary of £400 a year) have been created in order to cope with the work in connexion with the extended investigation of sleeping sickness. There are seven of these temporary medical officers in Uganda, two in the East Africa Protectorate, and one in Nyasaland. A candidate for the East Africa and Uganda service will therefore in general be offered one of these temporary appointments in the first instance and will be considered for absorption, if he wishes, when an opportunity occurs, provided that his service is approved. Temporary medical officers are engaged for three years and free passages are provided.

All applicants for medical employment in these colonies must be between the ages of 23 and 35. (In the case of

East Africa, Uganda, Nyasaland, and Somaliland preference will be given to candidates who are over 25 years of age. In the case of Fiji preference will be given to candidates who are under 30.) Preference will be given to those who have held hospital appointments as house physicians and house surgeons; testimonials to character and professional competence will be required, and every officer before being appointed will be medically examined by one of the consulting physicians of the Colonial Office: Sir Patrick Manson, 21, Queen Anne-street, Cavendish-square, London, W.; Dr. Hawtrey Benson, 57, Fitzwilliam-square, Dublin; and Lieutenant-Colonel J. Arnott, I.M.S., 8, Rothesay-place, Edinburgh.

Applications for medical employment in these colonies from persons in the United Kingdom must be addressed to the Assistant Private Secretary, Colonial Office, Downing-street, S.W.

West African Medical Staff.—The medical services of the West African Colonies and Protectorates, namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories) Southern Nigeria, and Northern Nigeria, form one service under the above name. All the medical officers for the service are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion. Preference will be given to unmarried candidates. Married ones are not excluded, but it should be remembered that passages for wives and children are not provided by the Government, and that houses for them are rarely available. Officers should not take their wives out with them until they have acquired experience of the local conditions, and have obtained the sanction of the Governor.

The grades and emoluments of officers of the staff are as follows:—

Principal Medical Officer.—The principal medical officers receive salary as follows: In Northern Nigeria and Southern Nigeria, £1000 a year, rising by annual increments of £50 to £1200 a year, with a duty allowance[1] at the rate of £200 a year. In the Gold Coast £1000 a year, without increments, but with a duty allowance at the rate of £200 a year. In Sierra Leone, £800 a year, rising by annual increments of £50 to £1000 a year, with a duty allowance at the rate of £160 a year. There is no principal medical officer in the Gambia.

Deputy Principal Medical Officer.—There are three appointments of this grade, in Northern Nigeria, Southern Nigeria, and the Gold Coast respectively. Salary at the rate of £800 a year, rising by annual increments of £25 to £900 a year, is attached to these appointments, together with a duty allowance at the rate of £160 a year.

Senior Sanitary Officer.—There are four appointments of this grade, one each for Northern Nigeria, Southern Nigeria, and the Gold Coast, and one for Sierra Leone and the Gambia. Salary at the rate of £800 a year, rising by annual increments of £25 to £900 a year, is attached to these appointments, together with a duty allowance at the rate of £160 a year.

Provincial Medical Officer.—There are four appointments bearing this title, two in Southern Nigeria and two in the Gold Coast, with salary at the rate of £700 a year, rising by annual increments of £25 to £800 a year, and duty allowance at the rate of £140 a year.

Senior Medical Officer.—There are eleven appointments of this grade, with salary at the rate of £600 a year, rising by annual increments of £25 to £700 a year, and a duty allowance at the rate of £120 a year.

Junior Sanitary Officer.—There are four appointments of this grade, with salary at the rate of £600 a year, rising by annual increments of £25 to £700 a year, and a duty allowance at the rate of £120 a year.

Medical Officer.—The salary attached to this grade is at the rate of £400 a year, rising by annual increments of £20 to £500 a year. There is no duty allowance. Medical officers who have served for five years and are recommended for a higher rate of salary are required to take a special course of study for three months. If they obtain satisfactory certificates at the end of the course they are placed, on completing six years' service, on a scale of salary at the rate of £525 a year, rising by annual increments of £25 to £600 a year.

Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for two or three months either at the London School of Tropical Medicine, Royal Victoria and Albert Docks, E., or at the Liverpool School of Tropical Medicine at University College, Liverpool. The cost of the tuition fees, board, and residence during such instruction, amounting to a maximum of £48 8*s.* 10*d.*, for three months, will be borne by the Government in the case of the London school; at Liverpool the cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £2 a week will be paid to them monthly in arrear for this purpose.

The ordinary tour of residential service is one year, followed by leave with full pay during the voyages to and from England, and for four or two months clear in England, according as the officer is returning for further service in West Africa or not. Free passages are given to all officers who are granted leave, and free passage is also given on first appointment, subject to the officer signing an agreement under which he is liable to refund its cost if he relinquishes his appointment for any other reason than physical or mental infirmity, or is removed for misconduct, within three years from the date of his arrival.

All officers of the staff, except principal medical officers, deputy principal medical officers, and sanitary officers, are allowed to take private practice, provided that it does not interfere with the faithful and efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable. It should, however, be noted that private practice does not exist at the majority of stations.

[1] A duty allowance is payable to the holder of the appointment to which it is attached only while he is actually performing its duties, and during his absence or incapacity it is paid, at the discretion of the Governor, to the officer performing them for the time being. A duty allowance is not a pensionable emolument.

OPENING OF THE LONDON MEDICAL SCHOOLS.

WINTER SESSION 1911–12.

St. Bartholomew's Hospital.—The opening of the session will be celebrated by the Old Students' Dinner, which will be held in the Great Hall of the Hospital on Oct. 2nd at 6.30 P.M. for 7 P.M., Mr. W. H. H. Jessop in the chair. Tickets (£1 1*s*) can be obtained from the honorary secretary, Mr. H. J. Waring, 37, Wimpole-street, London, W., or at the door.

Charing Cross Hospital.—The session will be opened on Oct. 2nd, at 3 P.M., by the annual distribution of prizes to the students in the out-patients' hall of the hospital. The dinner of the past and present students will take place on the evening of the same day.

St. George's Hospital.—The session will begin on Oct. 2nd, at 3 P.M., when Dr. Henry A. Miers, F.R.S., Principal of the University of London, will distribute the prizes and deliver the inaugural oration in the large lecture theatre of the Medical School. The subject of the oration will be "Lucidity." The annual dinner will take place at Princes Restaurant on the same evening, at 6.30 P.M. for 7 P.M. The chair will be occupied by Sir Isambard Owen, consulting physician to the hospital.

Guy's Hospital.—The session will open on Oct. 2nd. The opening meeting of the Hospital Medical School will take the form of a conversazione given by the Pupils' Physical Society, to take place at 8.45 P.M.; all present and past Guy's men are cordially invited to be present. The conversazione will be preceded by a dinner at 7.15 P.M. in the college dining-room. Tickets (price 3*s.* 6*d.*) can be obtained from the honorary secretaries of the Physical Society.

King's College Hospital.—The session will open on Oct. 5th, and the annual dinner will be held on Oct. 2nd, at 6.30 for 7 P.M., at the Waldorf Hotel, Aldwych, W.C., when Dr. Arthur Nicholson will preside. The secretary of the dinner committee is Dr. H. J. M. Playfair, 7, Upper Brook-street, London, W.

London Hospital.—The session will begin on Tuesday, Oct. 3rd, when a reception of old students will be held in the College Library at 3 P.M. Dr. James Mackenzie (the lecturer on Cardiac Research to the College) will deliver the "Schorstein" lecture at 4 P.M. The second lecture will be delivered on Wednesday, Oct. 4th, at the same hour; subject: "Auricular Fibrillation." The old students' dinner will be held at the Hotel Cecil on the Tuesday evening at 7.30 P.M.

St. Mary's Hospital.—The winter session will commence on

Oct. 2nd, when the prizes and awards for the sessions 1910–11 will be presented in the Library at 3 P.M. by the Right Hon. Lord Justice Fletcher Moulton. The annual dinner of past and present students will be held at the Grand Hall, Princes Restaurant, on Oct. 3rd, at 7 P.M., Mr. A. T. Norton, C.B., F.R.C.S., consulting surgeon to the hospital, in the chair.

Middlesex Hospital.—The session will open on Oct. 2nd, at 3 P.M., when Dr. Comyns Berkeley will give an introductory address, after which the prizes gained during the previous year will be distributed by Commendatore Marconi, D.Sc. Oxon., LL.D. The annual dinner of the past and present students and their friends will take place at the Trocadéro on the same evening, at 7 o'clock, when Dr. Frank J. Wethered will preside.

St. Thomas's Hospital Medical School.—The session will be opened on Oct. 3rd by the annual prize-giving. The annual dinner will be held on the same evening at the Hotel Cecil, Mr. G. H. Makins in the chair.

University College Hospital.—The session will be opened on Oct. 2nd, at 3.30 P.M., when the Dean's report on the progress of the medical school will be read, the medals and prizes distributed, and an introductory address delivered by Sir William Ramsay, K.C.B., LL.D., Ph.D., P.R.S. The chair will be occupied by Sir John Rose Bradford, K.C.M.G., F.R.S. The annual old students' dinner will be held on Oct. 2nd, at 7 o'clock, at the Imperial Restaurant, when Sir William Allchin will preside.

Westminster Hospital.—The session will begin on Oct. 2nd, and the annual dinner will take place on Oct. 5th, at the Waldorf Hotel. Dr. Dudley W. Carmalt-Jones, 78, Wimpole-street, London, W., is the secretary of the dinner committee.

London (Royal Free Hospital) School of Medicine for Women.—The session will begin on Oct. 2nd, when Sir Henry Butlin, President of the Royal College of Surgeons of England, will deliver the inaugural address at 4 P.M. Mrs. E. Garrett Anderson, M.D., president of the school, will preside.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Metropolitan Borough of Paddington.—The decrease of population in most of the metropolitan boroughs, revealed by the preliminary Census report for 1911, will naturally entail considerable revision of mortality statistics. In Paddington the population in 1901 was 143,976. The method adopted in the Public Health Department resulted in an estimate for 1910 of 152,396, or 608 less than the total arrived at by the Registrar-General's formula. The 1911 Census, however, has given a total of 142,576—an actual decrease of 1400 since 1901. On these data the corrected birth-rate for 1910, reckoned at 19·83, becomes 21·18, and the net death-rate 12·58 instead of 11·78. Dr. R. Dudfield gives special prominence to statistics of infantile mortality in the borough. The infant death-rate has continued to fall, and it is claimed that no inconsiderable proportion of the reduction has been due to causes other than the absence of epidemics of infantile diarrhœa during the last five years. This claim is partly based on tabular statements of the mortality of infants in each quarter of the year during the past 20 years, which show that the diminution, though much more conspicuous in the third quarter, is still marked in the first, second, and fourth. In a very instructive appendix on "Mortality of Young Children" Dr. Dudfield has analysed the records of deaths of children under 5 from 1891 to 1910, and presents a series of tables that illustrate the changes which have taken place in the sex and age mortalities during that period, and particularly in the probability of survival of males and females at the end of each year of life up to 5. The latter show that the improvement in the chances of survival has by no means been limited to the infants under one year, but is to be traced also at each succeeding age. Dr. Dudfield refers to the administrative arrangements which result in the general duty of protecting the health of the child passing out of the hands of the sanitary authority, to a large extent, when the child goes to school. In his view "the child should be under the care of the health authority during his school life as he is at other ages, and questions affecting his health should be given the first place, and not be secondary to educational progress as they appear to be now." In regard to notification of births, the report urges an amendment of the law which will do away with the necessity for the present dual system by requiring registration of births by the parent to be effected within five days. Alternatively he would place on the medical officer of health the duty of securing the official registration of the birth after receipt of notification from the parent. Out of 170 deaths certified as due to tuberculosis, 127 were pulmonary. Of these 127 deaths, 57 occurred in institutions, 35 being in Poor-law institutions; 38 of the 127 were deaths of persons who had first been reported to the medical officer of health as suffering from phthisis during the year, while other 37 had been previously so reported. 610 cases of phthisis were brought to the notice of the medical officer of health during 1910 through the tuberculosis dispensary, Poor-law, and other sources; 645 "survivors" were known to the department at the beginning of the year. The action taken in regard to these cases is largely determined by coöperation between the voluntary work of the dispensary and the home visiting by the women inspectors of the council. 1513 persons living in Paddington have presented themselves for treatment or diagnosis at the dispensary during the last two years, of whom 503 were found to present no sign of tuberculosis. The inspection of houses let in lodgings for the purpose of securing cleanliness and compliance with the borough by-laws is an important part of the sanitary work detailed in this report. Out of 17,864 houses in Paddington there are 1320 on the register as let in lodgings. New by-laws were prepared during the year to take advantage of the additional powers in regard to working-class lodgings which have been conferred on local authorities by the Housing and Town Planning Act of 1909. The report has several interesting references to food inspection and adulteration. In connexion with the latter Dr. Dudfield refers to the anomaly that while articles sold as "British wines" may be either non-alcoholic (preserved by salicylates) or alcoholic (17–23 per cent. of proof spirit) no indication of the variety supplied is given to the purchaser. Representations on the subject were made to the Local Government Board.

City of Cardiff.—During Dr. E. Walford's tenure of office the sanitary condition of the city of Cardiff has greatly improved, and its public health organisation has enormously developed. His report for 1910, like its predecessors, illustrates the magnitude and variety of the matters which are dealt with in the sanitary department of a great city. Among these we may refer to the system for the inspection of meat and foods, which is well organised in Cardiff and carried out by a veterinary surgeon and three food inspectors. All the slaughtering in the city is carried on at the municipal slaughter-houses and there is no difficulty in securing an efficient inspection of slaughtered animals. Most of the meat destroyed as unfit for food is surrendered voluntarily by the owner, and the inspectors have directions not to take into court any butcher in possession of tuberculous meat who has notified the fact to the proper authority as soon as he could reasonably be expected to be aware of it. On detection of diseased meat by the inspectors, the butcher or slaughterer is required either to surrender the carcass immediately or to give notice to the chief inspector that he desires the carcass to be detained for further examination. The general system pursued has been arranged between the local butchers' association and the health committee, and the particulars of diseased meat given in the report suggest that it is found satisfactory and efficient in practice. Dr. Walford draws special attention to the condition of bakehouses. He considers that additional powers should be available to require the provision of thermometers, and the fixing of a standard maximum temperature; the provision of flues to ovens and furnaces; a minimum height for the bakehouse; compulsory provision of lavatory accommodation, and of covered metal boxes for bakehouse refuse. These suggestions will receive general endorsement from those who are familiar with the unsatisfactory conditions under which bread is frequently prepared. Rooms have now been fitted at the City Hall for a weekly "consultation of infants," attended by Dr. Elizabeth Elder and the health visitors, which is being very largely used by mothers. Dr. Walford considers that this "consultation" has greatly increased

the practical utility of the Notification of Births Act and the Midwives Act, and that definite medical instruction given on these occasions will yield better results than the alternative of an incomplete system of home visitation by health visitors supplemented by leaflets of instruction. A training centre for midwives has been established at the University College, to which the Cardiff city council and the Glamorgan county council are contributors, with the privilege of nominating women for free studentships. There are 121 certified midwives in Cardiff who probably attended the majority of the 4822 births during 1910. During the year the number of official records of the midwife sending for medical help for the mother was 144—a figure which is small when compared with those in several other large towns. A small outbreak of scarlet fever traceable to a particular milk-supply occurred at the end of the year, but the inquiry made at the suspected farm did not lead to any conclusive evidence being obtained of the occurrence of infection of human origin. It is noteworthy that three deaths occurred among 33 cases, as usually milk-borne scarlet fever exhibits a low fatality rate. Dr. E. Fairfield Thomas contributes to the report a useful account of the municipal tuberculosis dispensary, to which is added a series of charts stated to be good illustrations of the spread of tuberculosis by contact. Without for a moment denying this method of spread, it may be pointed out that by an identical exposition the spread of blue eyes or red hair by contact could be easily shown. And statements, apparently received many years after the event, that infants under two years died from "phthisis" can have very little value as evidence that these children were tuberculous.

County Borough of Swansea.—The misfortune that the introduction of large schemes frequently stops the progress of smaller schemes with the same object has been experienced in Swansea, where a project for the provision of a municipal sanatorium for the treatment of phthisis has been dropped in view of the proposal to erect sanatoriums as part of the Welsh national memorial to King Edward VII.—a project the future of which in its turn is seriously affected by the National Insurance Bill. Dr. D. J. Morgan reports on an additional proposal to provide temporary chalets for phthisical cases, which, however, needed joint action between the town council and the board of guardians and appears to have been found impracticable. Swansea adopted voluntary notification of phthisis during 1910, the fee payable being only 1*s.* From June to the end of the year only 16 notifications were received. Dr. Morgan presses on his authority the need for a bacteriological laboratory under a bacteriologist giving his whole time to the work with suitable assistance, to be established for joint use by the municipal authorities and general hospital, and to be available, without charge, to all local medical practitioners for reports on material submitted, and, if necessary, for original research. Proposals of this kind will probably be made in many places in connexion with the provisions of the National Insurance Bill should these be found to enable local health committees to contribute to bacteriological laboratories, and the officer who has succeeded Dr. Morgan, on the appointment of the latter to the post of medical officer of health of Glamorgan county, may find much advantage from the efforts already made by his predecessor to demonstrate the practical utility of such a proposal. Cerebro-spinal fever was a notifiable disease in Swansea in 1908, when 46 cases were reported. In 1909 there were 12 cases, and in 1910 only 5 cases, all of which, however, were fatal. As another matter of interest may be mentioned Dr. Morgan's efforts to induce the governing bodies of places of divine worship to provide separate drinking-vessels for individual communicants. The single communion cup is now in use in 15 places of worship. In reporting on his work as school medical officer, Dr. Morgan draws attention to observations which have convinced him that the nutrition and physical condition of children derived from the poorest parts of the town are actually better than those of children of the "middle classes" attending the elementary schools. Although they are more dirty, "their bodies are better covered with flesh, their flesh is much firmer, they are more muscular, they are far less anæmic, and they do not exhibit the neurotic or nervous tendency which is so often a characteristic result of our so-called civilisation. ..... The 'middle classes' have to keep up appearances, and this often means a lack of nourishing food."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 77 of the largest English towns 8250 births and 6473 deaths were registered during the week ending August 19th. The revised estimate of the population in these towns in the middle of this year is 16,157,797 persons. The annual rate of mortality in these towns, calculated on this revised estimate, which had increased from 11·8 to 18·6 per 1000 in the five preceding weeks, further rose to 20·9 per 1000 in the week under notice. During the first seven weeks of the current quarter the annual death-rate in these towns averaged 15·0 per 1000, while in London during the same period the mean annual death-rate was 14·4 per 1000. The recorded annual death-rates in the 77 towns during the week under notice ranged from 9 6 in King's Norton, 10·5 in Bournemouth, 11·1 in Hornsey and in Hastings, and 12 4 in Bury, to 29·5 in Rhondda, 31·5 in Wigan, 32·6 in Stoke-on-Trent, and 33·4 in Grimsby and in Bolton. The 6473 deaths from all causes during the week in the 77 towns exceeded the number recorded in the previous week by 703, and without exception was the highest number recorded in any week during the current year. These 6473 deaths from all causes included 2720 which were referred to the principal epidemic diseases, against numbers increasing from 268 to 2103 in the seven preceding weeks, and included no fewer than 2553 from infantile diarrhœa, 59 from measles, 46 from whooping-cough, 37 from diphtheria, 14 from scarlet fever, and 11 from enteric fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases was equal to 8·8 per 1000, against 4·3 and 6·8 in the two preceding weeks. The deaths of infants under two years of age attributed to diarrhœal diseases in the 77 towns, which had increased from 70 to 1927 in the seven preceding weeks, further rose in the week under notice to 2553, and caused the highest annual rates of 15·1 in Stoke-on-Trent, 16·9 in Wigan, 17·0 in Bolton, 17·4 in Aston Manor, and 23·7 in Grimsby. The deaths referred to whooping-cough, which had increased from 43 to 60 in the five preceding weeks, fell again during the week to 46; 14 deaths were registered in London and its suburban districts, 4 in Liverpool, and 3 in Newcastle-on-Tyne. The fatal cases of measles numbered 59, and were 9 above the number returned in the previous week; 17 deaths were recorded in London and its suburban districts, 7 in Liverpool, 5 in Manchester, 4 in Nottingham, and 3 each in Stoke-on-Trent, in Bootle, and in Salford. The deaths from diphtheria, which had fallen from 42 to 24 in the three preceding weeks, rose again to 37 in the week under notice, and included 14 in London and its suburban districts, 3 in Coventry, and 2 each in Preston and in Bradford. The 14 deaths referred to scarlet fever were 9 below the number in the preceding week, and included 2 in London and its suburban districts, and 2 each in Birmingham, Coventry, and Liverpool. The deaths attributed to enteric fever, which had been 11, 8, and 19 in the three preceding weeks, fell to 11 during the week under notice, and included 2 in London and its suburban districts. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had steadily increased from 982 to 1442 in the 18 preceding weeks, fell again to 1388 on Saturday, August 19th; 149 new cases of this disease were admitted to these hospitals during the week, against 209, 191, and 159 in the three previous weeks. These hospitals also contained at the end of the week 772 cases of diphtheria, 247 of whooping-cough, 231 of measles, and 42 of enteric fever, but not one of small-pox. The 1654 deaths from all causes in London during the week under notice showed an increase of 35 upon the number returned in the previous week, and included 97 which were referred to diseases of the respiratory system, against 91 and 90 in the two previous weeks. The deaths attributed to different forms of violence in the 77 towns, which had been 223 and 162 in the two preceding weeks, rose again to 184 in the week under notice, and 373 inquest cases were registered. The causes of 36, or 0·6 per cent., of the deaths registered in the 77 towns during the week under notice were not certified either by a registered medical practitioner or by a

coroner. All the causes of death were duly certified in London, Leeds, Bristol, West Ham, Bradford, Hull, Salford, and in 49 other smaller towns; the 36 uncertified causes of death included 6 in Birmingham, 4 in Liverpool, 3 in Manchester, 3 in Sheffield, and 2 each in Stoke-on-Trent and in St. Helens.

In 77 of the largest English towns 8073 births and 6568 deaths were registered during the week ending August 26th. The revised estimate of population of these towns in the middle of this year is 16,157,797 persons. The annual rate of mortality in these towns, calculated on this revised estimate, which had increased from 11·8 to 20·9 in the six preceding weeks, further rose to 21·2 in the week under notice. During the first eight weeks of the current quarter the annual death-rate in these towns averaged 15·8 per 1000, while in London during the same period the death-rate did not exceed 15·0 per 1000. The recorded annual death-rates in the 77 towns last week ranged from 9·8 in Hornsey, 11·3 in Handsworth (Staffs) and in Halifax, and 11·8 in Reading, to 33·9 in St. Helens, 35·2 in Smethwick, 37·9 in Stoke-on-Trent, and 38·2 in Rotherham. The 6568 deaths from all causes in the 77 towns last week exceeded the number recorded in the previous week by 95, and without exception was the highest number recorded in any week during the current year. The 6568 deaths from all causes included 2900 which were referred to the principal epidemic diseases, against numbers increasing from 268 to 2720 in the eight preceding weeks, and included no fewer than 2714 from infantile diarrhœa, 68 from whooping-cough, 54 from measles, 34 from diphtheria, 12 from scarlet fever, and 18 from enteric fever, and not one from small-pox. The mean annual death-rate from these epidemic diseases was equal to 9·4 per 1000, against 6·8 and 8·8 in the two preceding weeks. The deaths of infants under 2 years of age attributed to diarrhœal diseases in the 77 towns, which had increased from 70 to 2553 in the eight preceding weeks, further rose last week to 2714, and caused the highest annual rates of 15·3 in Bolton and in Hull, 15·8 in Rotherham, 17·6 in Burnley, 17·8 in St. Helens, 18·9 in Stoke-on-Trent, and 20·7 in Rhondda. The deaths referred to whooping-cough, which had been 60 and 46 in the two preceding weeks, rose again last week to 68; 14 deaths were registered in London and its suburban districts, 7 in Liverpool, and 7 in Leeds. The fatal cases of measles numbered 54 and were 5 fewer than the number returned in the preceding week; 13 deaths were recorded in London and its suburban districts, 9 in Liverpool, 7 in Manchester, 4 in Bolton, and 3 in Wolverhampton. The deaths from diphtheria, which had increased from 24 to 37 in the two preceding weeks, fell again to 34 last week, and included 15 in London and its suburban districts, 3 each in Liverpool and in Salford, and 2 each in Newcastle-on-Tyne and Bristol. The 12 deaths referred to scarlet fever were 2 below the number in the preceding week. No death was registered in London or in its suburban districts; 2 of the deaths occurred in Birmingham. The deaths attributed to enteric fever, which had been 8, 19, and 11 in the three preceding weeks, rose to 18 last week, and included 5 in London and its suburban towns, and 3 in Rhondda. The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had increased from 982 to 1388 in the 19 preceding weeks, fell again to 1352 on Saturday last; 132 new cases of this disease were admitted to these hospitals during the week, against 191, 159, and 149 in the three previous weeks. These hospitals also contained at the end of last week 746 cases of diphtheria, 242 of whooping-cough, 194 of measles, and 48 of enteric fever, but not 1 of small-pox. The 1646 deaths from all causes in London last week showed a decrease of 6 from the number returned in the previous week, and included 85 which were referred to diseases of the respiratory system, against 90 and 97 in the two previous weeks. The deaths attributed to different forms of violence in the 77 towns, which had been 162 and 184 in the two preceding weeks, fell to 152 last week, and 326 inquest cases were registered. The causes of 39, or 0·6 per cent., of the deaths registered in the 77 towns during the week under notice were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified last week in Bristol, Nottingham, Manchester, Salford, Leeds, Hull, and Newcastle-upon-Tyne, and in 45 other smaller towns. The 39 uncertified causes of death last week included 5 in Liverpool and 4 each in Stoke-on-Trent and in Birmingham.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns, having an estimated population of 1,710,291 persons in the middle of this year, 816 births and 465 deaths were registered during the week ending August 19th. The annual rate of mortality in these towns, which had been equal to 13·8 and 14·4 in the two preceding weeks, fell to 14·2 in the week under notice, and was 0·2 below the mean rate in these towns during the first seven weeks of the current quarter, and was 6·7 per 1000 below the mean death-rate during the same period in the 77 large English towns. The annual death-rates in the Scotch towns in the week ranged from 8·7 in Perth and 9·6 in Aberdeen to 16·4 in Glasgow, and 18·7 in Greenock. The 465 deaths from all causes in the eight towns in the week under notice were 6 fewer than the number in the previous week, and included 99 which were referred to the principal epidemic diseases, against 62 and 99 in the two preceding weeks; of these 99 deaths, 78 resulted from diarrhœa, 6 from measles, 7 from whooping-cough, 3 from diphtheria, 4 from scarlet fever, and 1 from enteric fever. The mean annual death-rate from these epidemic diseases in the eight towns in week under notice was equal to 3·0 per 1000, the mean rate in the same period from the same diseases in the 77 English towns having been 8·8. The deaths from diarrhœa, which had been 33 and 70 in the two preceding weeks, further rose during the week to 78, and included 64 of infants under two years of age; 50 deaths occurred in Glasgow, 8 in Greenock, and 6 in Paisley. The 6 deaths referred to measles were 5 below the number in the previous week, and included 4 in Glasgow and 2 in Leith. The 7 fatal cases of whooping-cough were 2 below the number returned in the preceding week, and included 3 in Glasgow and 2 in Edinburgh. The 3 deaths attributed to diphtheria were 2 fewer than the number referred thereto in the preceding week. Of the 4 deaths from scarlet fever 3 were registered in Glasgow, where also the death from enteric fever occurred. The deaths referred to diseases of the respiratory system in the eight towns, which had been 32 and 39 in the two preceding weeks, fell to 29 during the week under notice, and were 9 below the number in the corresponding week of last year. Of the 465 deaths from all causes in the eight towns 129, or 28 per cent., were recorded in public institutions, and 13 were attributed to different forms of violence. The causes of 4, or 0·9 per cent., of the deaths in the eight towns were not specified or not certified; in the 77 English towns the proportion of uncertified causes of death during the week did not exceed 0·6 per cent.

In eight of the principal Scotch towns, having an estimated population of 1,710,291 persons in the middle of this year, 815 births and 509 deaths were registered during the week ending August 26th. The annual rate of mortality in these towns, which had been equal to 14·4 and 14·2 in the two preceding weeks, rose to 15·5 last week, and was 1·0 above the mean rate in these towns during the first eight weeks of the current quarter, but was 0·3 per 1000 below the mean death-rate during the same period in the 77 large English towns. The annual death-rates in the Scotch towns last week ranged from 10·2 in Perth and 12·4 in Edinburgh to 16·8 in Dundee and 17·3 in Aberdeen. The 509 deaths from all causes in the eight towns last week were 44 above the number in the previous week and included 114 which were referred to the principal epidemic diseases, against 99 in each of the two previous weeks; of these 114 deaths 88 resulted from diarrhœa, 4 from measles, 12 from whooping-cough, 5 from diphtheria, 4 from enteric fever, and 1 from scarlet fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases in the eight towns last week was equal to 3·5 per 1000, the mean rate last week from the same diseases in the 77 English towns having been 9·4. The deaths from diarrhœa, which had been 70 and 78 in the two preceding weeks, rose last week to 88, and included 73 of infants under two years of age; 50 deaths occurred in Glasgow, 16 in Dundee, and 8 in Edinburgh. The 4 deaths referred to measles were 2 fewer than the number in the previous week, and included 3 in Glasgow and 1 in Leith. The 12 fatal cases of whooping-cough were 5

above the number returned in the preceding week, and included 6 in Glasgow and 2 in Edinburgh. The 5 deaths attributed to diphtheria were 2 more than the number in the preceding week; all 5 occurred in Glasgow. The 4 deaths from enteric fever showed an increase of 3 over the preceding number, and included 2 in Glasgow. The deaths referred to diseases of the respiratory system in the eight towns, which had been 39 and 29 in the two preceding weeks, rose to 41 last week, and were 8 below the number in the corresponding week of last year. Of the 509 deaths from all causes in the eight towns last week 157, or 31 per cent., were recorded in public institutions, and 27 were attributed to different forms of violence. The causes of 14, or 2·8 per cent., of the deaths in the eight towns last week were not specified or not certified; in the 77 English towns the proportion of uncertified causes of death during the week did not exceed 0·6 per cent.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,149,495 persons in the middle of this year, 614 births and 427 deaths were registered during the week ending August 19th. The annual rate of mortality in these towns, which had been 16·4, 16·8, and 17·1 in the three preceding weeks, rose to 19·4 per 1000 in the week under notice. During the first seven weeks of the current quarter the annual death-rate in these towns averaged 16·8, whilst the mean rate during the same period did not exceed 15·0 per 1000 in the 77 English towns, and was equal to 14·4 in the eight Scotch towns. The annual death-rates in the week under notice was equal to 25·1 in Dublin (against 19·1 in London), 18·8 in Belfast, 12·9 in Cork, 16·6 in Londonderry, 10·9 in Limerick, and 22·8 in Waterford; whilst in the 16 smallest of these Irish towns the mean annual death-rate did not exceed 12·4 per 1000. The 427 deaths from all causes in the 22 Irish towns during the week under notice showed an increase of 50 over the number returned in the previous week, and included 114 which were referred to the principal epidemic diseases, against 83 and 117 in the two preceding weeks; of these 114 deaths, 104 resulted from diarrhœal diseases, 3 from enteric fever, 3 from whooping-cough, 3 from diphtheria, and 1 from measles, but not any from small-pox or scarlet fever. The 114 deaths from the principal epidemic diseases were equal to an annual death-rate of 5·2 per 1000; the mean rate from the same diseases in the 77 English towns was equal to 8·8 per 1000, whilst in the eight Scotch towns it was 3·0. The deaths attributed to diarrhœal diseases, which had been 66 and 106 in the two preceding weeks, fell to 104 in the week under notice and included 93 of infants under two years of age; 56 deaths were registered in Dublin, 30 in Belfast, and 3 each in Cork, Londonderry, Waterford, and Portadown. The 3 deaths from whooping-cough were 1 in excess of the number in the previous week, and were all registered in Dublin. Of the 3 deaths from enteric fever, 2 occurred in Dublin and 1 in Belfast. The deaths from diphtheria occurred in Dublin, Belfast, and Dundalk, and the death from measles occurred in Newtownards. The deaths referred to diseases of the respiratory system in the 22 towns, which had been 20 and 38 in the two preceding weeks, rose during the week under notice to 39. Of the 427 deaths from all causes in the 22 town districts 123, or 29 per cent., occurred in public institutions, and 16 deaths were attributed to different forms of violence. The causes of 14, or 3·3 per cent., of the deaths registered in the 22 towns were not certified either by a registered medical practitioner or by a coroner after inquest; the proportion of uncertified causes of death during the week under notice did not exceed 0·6 per cent. in the 77 large English towns, and was equal to 0·9 in the eight Scotch towns.

In the 22 town districts of Ireland, having an estimated population of 1,149,495 persons in the middle of this year, 623 births and 426 deaths were registered during the week ending August 26th. The annual rate of mortality in these towns, which had been 16·8, 17·1, and 19·4 in the three preceding weeks, fell to 19·3 per 1000 in the week under notice. During the first eight weeks of the current quarter the annual death-rate in these towns averaged 17·1, whilst the mean rate during the same period was 15·8 per 1000 in the 77 English towns, and was equal to 14·5 in the eight Scotch towns. The annual death-rate last week was equal to 20·1 in Dublin (against 19·0 in London), 29·7 in Belfast, 25·9 in Cork, 25·6 in Londonderry, 17·7 in Limerick, and 32·3 in Waterford; whilst in the 16 smallest of these towns the mean annual death-rate was 21·6 per 1000. The 426 deaths from all causes in the 22 Irish towns showed a decline of 1 from the number returned in the previous week and, included 133 which were referred to the principal epidemic diseases, against 117 and 114 in the two preceding weeks; of these 133 deaths, 112 resulted from diarrhœal diseases, 8 from whooping-cough, 5 from diphtheria, 4 from enteric fever, 3 from measles, and 1 from scarlet fever, but not any from small-pox. These 133 deaths from the principal epidemic diseases were equal to an annual death-rate of 6·1 per 1000. The mean rate from the same diseases in the 77 English towns was equal to 9·4 per 1000, while in the eight Scotch towns it was 3·5. The deaths attributed to diarrhœal diseases, which had been 106 and 104 in the two preceding weeks, rose to 112 last week, and included 93 of infants under two years of age. Forty-eight deaths were registered in Dublin, 33 in Belfast, 7 in Newtownards, 6 in Cork, and 5 in Limerick. The 8 deaths from whooping-cough showed an increase of 5, and included 6 in Dublin. The 5 deaths from diphtheria were 2 more than the preceding number, and were all registered in Dublin. The 4 deaths from enteric fever showed an increase of 1, and included 2 in Belfast. The 3 deaths from measles were 2 more than the number recorded in the preceding week, and included 2 in Newtownards. The deaths referred to diseases of the respiratory system in the 22 towns, which had been 38 and 39 in the two preceding weeks, fell last week to 30. Of the 426 deaths from all causes in the 22 town districts last week, 111, or 24 per cent., occurred in public institutions, and 11 deaths were attributed to different forms of violence. The causes of 16, or 3·8 per cent., of the deaths in the 22 towns last week were not certified either by a registered medical practitioner or by a coroner after inquest; the proportion of uncertified deaths during the week under notice did not exceed 0·6 per cent. in the 77 large English towns, and was equal to 2·8 per cent. in the eight Scotch towns.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Surgeon George Oswald Morrell Dickenson has been promoted to the rank of Staff-Surgeon.

The following appointments are announced:—Staff-Surgeons: P. T. Sutcliffe to the *Pembroke*, additional, for the *Falmouth*, and to the *Falmouth*, on commissioning; W. E. Gribbell to the *Defiance*; F. E. Anly to the *Sappho* for voyage out to Port Said and to the *Philomel* on recommissioning. Surgeons: A. D. C. Cummins and G. Carlisle to the *Victory*, additional, for disposal; L. C. Rowan-Robinson to Gibraltar Hospital; A. S. Bradley to the *Excellent*, additional, for the *Grafton*; A. C. W. Newport to the *Royal Arthur*.

ROYAL ARMY MEDICAL CORPS.

The name of Major Langford N. LLoyd, D.S.O., is as now described, and not as stated in the Gazette of August 4th, 1911.

Lieutenant-Colonel Samuel R. Wills retires on retired pay (dated August 30th, 1911).

The undermentioned Lieutenants to be Captains (dated August 4th, 1911):—John James, Alfred C. H. Suhr, John E. Ellcome, Gerald J. Keane, Harold H. Blake, Robert M. Dickson, Frank Worthington, Frederick H. Bradley, Alexander L. Stevenson, Bernard Varvill, Joseph W. Houston, Arthur Shepherd, Wilfred J. Dunn, Frank B. Dalgliesh, Malcolm Leckie, Spencer G. Walker, Charles E. L. Harding, Falkiner M. Hewson, Arthur L. Foster, Claude M. Rigby, Alan G. Wells, Alexander E. G. Fraser, Walter H. S. Burney, Thomas S. Eves, Leo Murphy, Arthur H. T. Davis, John S. McCombe, William J. Tobin, Campbell McQueen, and Robert O'Kelly.

The undermentioned to be Lieutenants (on probation) (dated July 28th, 1911):—Basil Hamilton Hebden Spence, William Balfour Laird, Douglas Walter Bruce, Herbert Stuart Blackmore, Edward Spencer Calthrop, Leonard Buckley, Lieutenant Francis Robert Bradley Skrimshire (from the 4th Battalion, The Hampshire Regiment), Richard Trevor Vivian, Thomas Edward Osmond, Ernest Cotton

Deane, Stanley Parkinson Sykes, Robert Davidson, Edward George Huxley Cowen, Edward Bruce Allnutt, James May Elliott, Harry Campbell Todd, Maurice Drummond, Alexander Gillilan Johnson MacIlwaine, William Stewart, Frank Stuart Tamplin, Ivor Robert Hudleston, Arthur Stanley Heale, Arthur John Ormsby Wigmore, Henry James Gordon Wells, and Lieutenant William Leckie Webster (from the Royal Army Medical Corps, Special Reserve).

The under-mentioned Lieutenants (on probation) are seconded under the provisions of Article 300, Royal Warrant for Pay and Promotion, 1909 (dated July 28th, 1911): William B. Laird, Francis R. B. Skrimshire, Thomas E. Osmond, Edward B. Allnutt, and Harry C. Todd.

Lieutenant-Colonel H. L. Battersby has been appointed to medical charge at Ipswich. Lieutenant-Colonel T. W. O'H. Hamilton, C.M.G., is retiring on half-pay. Major J. S. Gallie has joined for duty in the London District. Major T. H. J. C. Goodwin has been granted four months' leave. Captain G. Petit has been granted three months' leave. Captain T. W. Browne and Captain C. Kelly have been granted extensions of leave. Lieutenant-Colonel L. T. M. Nash, commanding the Station Hospital at Karachi, has arrived home on leave of absence. Major F. W. Begbie, surgical specialist at Colchester, has been appointed Commandant of the Royal Army Medical Corps Camp of Instruction at Tidworth Park, Salisbury Plain. Major G. B. Carter, from the Curragh Camp, Kildare, has taken over charge of the Military Hospital at Rangoon. Major H. B. G. Walton has been transferred from Bareilly Cantonment to the Station Hospital at Mussoorie. Captain J. H. Duguid, from Limerick, has taken up duty at Tipperary. Captain H. V. Bagshaw has been transferred from Halifax to Lichfield for duty at the Military Hospital. Captain A. C. Osburn, on completion of duty at the Military Hospital, Bedford, has been posted to Colchester. Captain M. O. Wilson, from Ambala Cantonment, has been appointed to Gharial. Captain E. W. Siberry has arrived home on leave of absence from South Africa. The following officers, on completion of their course of instruction at the Royal Army Medical College, London, have been posted for duty to the Eastern Command: Captains A. E. B. Wood, J. B. Meldon, J. M. M. Crawford, C. Bramhall, T. S. Dudding, R. H. MacNicol, W. Waley, M. D. Ahern, and C. J. Wyatt. Lieutenant M. J. Williamson, from Cardiff, has been appointed to Tidworth, Salisbury Plain. Lieutenant O. W. McSheehy has been transferred from Exeter to Devonport. Lieutenant A. T. J. McCreery, on completion of a course of instruction in Indian sanitation at Poona, has been appointed to the Station Hospital at Khandalla. Lieutenant C. H. O'Rorke, from Lucknow, has joined the Station Hospital at Chakrata.

INDIAN MEDICAL SERVICE.

The King has approved of the following promotions:—To be Colonel: Lieutenant-Colonel John Smyth (dated June 7th, 1911). To be Captains: Lieutenants James William Barnett and Madan Lal Puri (dated March 8th, 1911).

The King has also approved of the retirement of Lieutenant-Colonel Alexander Milne (dated July 25th, 1911).

Lieutenant-Colonel E. H. Wright has been selected to officiate as Principal of the Madras Medical College. Major T. H. Foulkes has been granted leave of absence home from India for one year. Major E. M. Illington has taken up duty at Waltair as district medical and sanitary officer of Vizagapatam. The services of Major P. P. Atal have been placed at the disposal of His Excellency the Commander-in-Chief by the Government of India. Major R. H. Elliot has arrived home from India on six months' combined leave of absence. Captain W. A. Justice has been appointed to officiate as Sanitary Commissioner of Madras Presidency during the absence on deputation of Lieutenant-Colonel H. Thompson. Captain C. A. F. Hingston has taken up duty as Ophthalmic Surgeon at the Medical College Hospital, Madras, during the absence on leave of Major R. H. Elliot. Captain M. F. Reaney has been appointed a Civil Surgeon of the Second Class by the Government of India. Captain T. G. N. Stokes, sanitary commissioner of the Central Provinces, has been granted six months' leave of absence home from India. The services of Captain F. C. Fraser have been replaced at the disposal of His Excellency the Commander-in-Chief by the Government of India. Captain E. O. Thurston has been appointed to officiate as Professor of Anatomy at the Medical College, Calcutta, and Surgeon to the College Hospital during the absence on leave of Major C. R. Stevens. Captain J. W. H. Babington has been granted general leave for one year. Captain G. S. Husband has been appointed to the medical charge of the 9th Bhopal Infantry at Fyzabad. Captain F. H. Stewart has been appointed to the medical charge of the 74th Punjabis at Lucknow. Captain H. C. Buckley has been detailed for plague duty in the Punjab. Captain C. H. Fielding has been appointed to the medical charge of the 17th Infantry at Manipore. Lieutenant K. K. Mukerji has been permanently transferred to Kohat.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant James O. Hamilton is confirmed in his rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd Northumbrian Field Ambulance: To be Captains: Lieutenant D. V. Haig (dated July 30th), Lieutenant D. L. Fisher (dated July 31st), and Lieutenant G. G. Farquhar (dated August 1st).

1st Northern General Hospital: Captain W. E. M. Ede resigns his commission (dated August 19th).

Attached to Units other than Medical Units.—Captain G. Wilson to be Major (dated May 1st), and Captain A. Hilton to be Major (dated July 12th).

For Attachment to Units other than Medical Units.—S. L. Brimblecombe to be Lieutenant (dated May 11th), and Lieutenant P. Moxey, from 3rd South Midland Field Ambulance, to be Lieutenant (dated August 21st).

DEATHS IN THE SERVICES.

Deputy Surgeon-General John Jones, formerly of the Indian Medical Service, on August 8th, at his residence, 231, Cromwell-road, London, S.W., aged 81 years. He obtained the qualification of M.R.C.S. Eng. in 1853 and that of M.R.C.P. Lond. in 1860; he also graduated as M.D. at the University of St. Andrews in 1856. He entered the Bengal Medical Service as assistant surgeon on Feb. 20th, 1856, and a year later served during the Indian Mutiny with the Delhi Field Force after the capture of Delhi, taking part in the actions of Narnoul and Karkarala, the capture of Bareilly, the operations in Oude, and the action of Mehndee (medal). He was promoted surgeon on Feb. 20th, 1868; surgeon-major on July 1st, 1873; brigade surgeon on April 1st, 1882; and retired with the rank of deputy surgeon-general on Jan. 17th, 1885. He was for some time surgeon superintendent of the Bengal Presidency General Hospital.

Deputy Surgeon-General Robert Walter Clifton, formerly of the Army Medical Staff, on August 16th, at 15, Auriol-road, West Kensington, London, W., aged 75 years. He became qualified as M.R.C.S. Eng. in 1857, and joined the army as assistant surgeon in September of the same year. In 1860–61 he served in the China war, and was present at the action of Sinho and the capture of the Taku Forts (medal with clasp). He was promoted to surgeon on August 31st, 1872; to surgeon-major on March 1st, 1873; to brigade surgeon on Jan. 2nd, 1883; to deputy surgeon-general on June 21st, 1887; and retired with the rank of deputy surgeon-general on April 11th, 1889. During the latter period of his service he was principal medical officer of the Curragh Brigade.

Lieutenant-Colonel James Scanlan, formerly of the Army Medical Staff, on August 12th, at Kerswell, Broadclyst, Devon, aged 64 years. He studied medicine at the University of Glasgow, where he graduated as M.B. and C.M. in 1868. Entering the army in October of that year he was promoted surgeon in March, 1873, and surgeon-major in October, 1880, retiring with the rank of lieutenant-colonel in October, 1888. He served in India and also in the South African war in 1881.

EXETER CITY ASYLUM.—At the last meeting of the Exeter city council it was reported that for the year ended March 31st last the city asylum had been so managed that its working expenses were all paid, and a sum of £1203 had been placed towards the interest and sinking fund.

Correspondence.

"Audi alteram partem."

A QUESTION IN EUGENICS.

To the Editor of THE LANCET.

SIR,—Since you invite an expression of opinion upon this subject from the profession at large permit me to signify my unqualified endorsement of the sensible and humane position assumed by Dr. Robert Jones in THE LANCET of August 12th, p. 472. The problem of the survival of the unfit is one the gravity of which increases *pari passu* with the advances of civilisation. In more primitive communities the unfit individual tends to be eliminated by the rigour of the conditions of existence; under milder conditions of upbringing he survives to the detriment of the race. From the point of view of physical and moral hardihood there can be little doubt that it is possible to over-civilise and to render the conditions of life too easy.

Since the degenerate has increased and is increasing, how, then, are we to deal with him so as to put some curb upon his further multiplication? Are we to revert to more Spartan conditions of upbringing and so let Nature solve the problem for us? Are we to promote the euthanasia of the hopelessly unfit? Are we so to mutilate them as to render them incapable of propagating their unfitness? Or are we to deal with them as we do at present, trusting that the gradual amelioration of the race may by-and-by reduce their proportion? The full discussion of these problems would require not a letter but a volume. There is much to be said for the first and fourth propositions, and, startling as it may sound, even something for the second, more particularly in the case of the graver forms of idiocy. It is generally recognised that the State has the right to kill, but it is repugnant to every instinct of common justice and humanity to maintain that it has the right to mutilate. The degenerate child did not ask to be born. He is a responsibility and an encumbrance, and may possibly be a danger, but that is no reason why, of a man, we should make him nothing. Life under such conditions is not worth living. Better, far better, a merciful death than so hideous a fate.

Few physiologists will deny that there is an inseparable and deep-rooted connexion between the integrity of the generative functions and those of the mind. Alike mentally and physically, the eunuch is lazy, apathetic, and nerveless. Should he develop activities they are for the most part monstrous and abnormal. He is outside the pale of humanity; and the knowledge that he is not as other men so reacts upon his nature as to render him inhuman. Overpowered by despair and by the ever-present sense of degradation, he is either goaded into madness with Attis, or into fiendish atrocities with the diabolical Agha Muhammad. More commonly, however, he sinks into that condition of nullity which is the doom of the vast majority of his miserable brotherhood. The exceptions of Narses and Origen serve merely to emphasise the rule. And so also with minor degrees of sexual imperfection, such as those produced by vasectomy. I recall the case of a cryptorchid, which may serve as an illustration. The man was not impotent, though his sexual appetite was of the smallest. He belonged to the educated classes, but was one of the most unintellectual of mankind. He shunned general society; was a wretched conversationalist; read nothing except the newspaper; and was seemingly incapable of responding to any mental stimuli higher than those of present need or prospective amusement. He was entirely self-centred, lukewarm in his affections, without consideration for others, neglectful of business, and destitute of any serious object in life.

The madman in his lucid intervals, and the epileptic in the intervals of his epilepsy, may be persons of sound sense, or possibly even of genius. To take the first instances that occur to me, the poet Cowper and Charles and Mary Lamb were all subject to attacks of mental derangement. Once admit the principle of sterilisation for mental disease, and I echo the pertinent query of Dr. Robert Jones, Where are you going to draw the line? Had these persons been sterilised when they first showed signs of insanity they would almost certainly have been reduced to the average level of intelligence, if not beneath it. As none of them married or had issue posterity would have been none the better; but who shall dare to say that literature would have been none the worse? Before mutilating a child or an adolescent at the instance of some crack-brained exponent of eugenics, it might be well to pause and consider whether we are not abolishing a possible genius. It might be well also to remember that England is neither in Switzerland nor in Indiana, and that her system of jurisprudence differs somewhat from that of those enlightened quarters of the globe.

From the point of view of professional ethics I cannot too strongly express my opinion that all operations whose sole aim and object is the production of sterility are utterly indefensible. It is the duty of the practitioner to do that which is best for his patient individually, not that which is worst for his patient, even though it be supposed by some to be for the advantage of the race. The case of the degenerate is pitiable enough already. What right has he to render it more so? It is his duty to remember alike what is due to his patient and to himself. The surgeon is supposed to be a gentleman—a man not merely of humanity but of culture and refinement; and he owes it to himself so to support that character that the public may recognise and respect it. Surely it is nothing short of an insult to propose to such an one that he should degrade himself to the level of a sow-gelder or a Chinese knifer!

I am, Sir, yours faithfully,

BRYAN CHARLES WALLER, M.D., F.R.C.S. Edin.,
Sometime Lecturer on Pathology in the School of Medicine, Edinburgh.

Kirkby Lonsdale, August 15th, 1911.

To the Editor of THE LANCET.

SIR,—In my opinion the letters of Dr. Robert Jones and Dr. C. T. Ewart in THE LANCET of August 12th clearly and ably placed before your readers the two sides of the question whether a father who has an epileptic son has the right to have him sterilised to prevent the propagation of the epileptiform species, and would a surgeon be morally and legally justified in doing the operation. To my mind the question is purely a moral one, and its answer will solely depend upon the moral standard of the father and the surgeon, as well as the moral standard of the State to whose laws they are both subject. Hence, it will no doubt interest your readers if I state my views on the question raised as a father and a physician and surgeon who is a member of the Catholic Church.

If I had an epileptic son I would not as a Catholic have him sterilised to prevent the reproduction of epileptiform offspring. I cannot at present point to any specific Catholic dogma on the subject, for I presume the question has not been discussed by Catholic theologians, but I base my opinion on the spirit and letter of Catholic teaching in the following analogous case. If a Catholic husband should ask his spiritual adviser if he would be justified in using artificial means to prevent conception because his wife was in delicate health and she had been told by her medical attendant that if she had a child it might not survive its birth, or if it did survive it would be an unfit on account of inherited weakness either of disease or of constitution and would not live long, or were its life prolonged it would be a burden to the parents and to the State; the answer of the spiritual adviser would be that under no circumstances whatever, not even to prevent the reproduction of the unfit, was it lawful to use artificial means to prevent the propagation of the human race. The husband and wife would be counselled to practise continence until a healthy child could be born, and if the conditions were such that the birth of a healthy child was an impossibility, then they could either be always continent or bear the burden of a weak offspring, the former course being the one that they would be advised to adopt. From this answer it can be logically argued that a Catholic father would not be morally justified in having his epileptic son sterilised to prevent the reproduction of degenerate species. The course that the Catholic father would adopt would be to use every possible moral means to prevent his epileptic son from marrying, and the father's efforts in this direction would be earnestly and strenuously supported by the son's spiritual adviser. It will also be evident from the answer that a Catholic surgeon would

not be justified in doing the operation, just as no Catholic physician or surgeon is justified in conniving at the practice of race-suicide by telling a patient, who may consult him on the subject, how the thing is done.

From the point of view of a sociologist it seems to me that the crux of the question raised lies in the pertinent query of Dr. Robert Jones: What is to be the limit of sterilisation to prevent the reproduction of the unfit? If we sterilise to prevent the propagation of epilepsy and thus improve the race, why not sterilise to prevent the reproduction of the mentally degenerate and the physically defective, the child with inborn tendencies to all forms of wickedness and criminality, and the child with inherited weakness whether of disease or of constitution? I am afraid that if this were done we would have to sterilise the major part of the human race. Then who would be the final arbiter in sterilisation, and would the father, when it was found that one child was unfit, submit himself to be sterilised to prevent more unfits? It is to be noted that Dr. Ewart, either unwittingly or wittingly, did not allude to this vital point of the limitation of sterilisation.

There is just one other point I would wish to place before your readers, and it was no doubt in the mind of Dr. Robert Jones when he wrote that sterilisation would not possibly improve the moral and mental qualities of the race, for the presence of human weakness was a moral appeal to the strong and served a useful purpose in the moral development of any people. While I am aware of the difference between the prevention by physical means of the birth of the unfit for the good of the race and the destruction of the unfit by the same means and for the same object, there is a dangerously narrow border-line between the two, and transition from the one act to the other would be easy. The arguments that could be urged for the one act could be urged with equal logic and force for the other. To destroy the unfit for the physical good of the race would be a complete reversal of the hands of the clock of civilisation, for it would reduce man to the ethical level of the brute. In my opinion, the lion or the tiger, which seems to have no control over its vicious impulses and devours weaker animals for its own preservation and for the joys and pleasures of its life, would have as high an ethical standard as that of the man who would destroy the unfit for what would be practically his own ease and comfort, and to avoid the practice of self-denial and the control of his inherent selfish and lustful desires for the satiations of a luxurious life. As a matter of fact, the ethics of the brute would be higher than those of man, for in its case the question of self-preservation is involved in its destruction of weaker animals, and the brute does not kill or even acquiesce in the destruction of its own unfit, but, on the contrary, it will guard and protect its young, whether fit or unfit, even to the point of sacrificing its own life.

I cannot conclude without thanking Dr. Robert Jones for his luminous and closely reasoned letter. The value of his opinion lies in the fact that it is the opinion of a distinguished alienist whose sound judgment is based on mature experience in the observation and treatment of mental disease. His opinion on this question is, I am quite sure, the opinion of every Christian father and every Christian physician and surgeon in the civilised world.

I am, Sir, yours faithfully,

THOMAS COLVIN, M.D., M.S. Glasg., J.P.

Glasgow, August 25th, 1911.

THE CURIOUS HISTORY OF A SWALLOWED PIN.

To the Editor of THE LANCET.

SIR,—I was much interested in reading the case related by Dr. Wilfred Balgarnie in THE LANCET of August 19th, p. 500, under the above title. It reminded me of a somewhat similar circumstance which occurred during my practice in Paris towards 1862 or 1863, and I fancy that, being at that time your "own correspondent," I may have referred to it in one of my weekly letters.

In the Rue de Matignon, Faubourg St. Honoré, where I lived, I had a neighbour, a Hungarian, who was a working glover. One morning the glover's wife brought into my consulting-room a screaming baby boy of the crawling age—i.e., 18 months old. The mother, evidently in great anxiety, told me that whenever moved or carried about the poor baby began screaming until again replaced in its cradle. On the child being stripped I found it well nourished and undisturbed by palpation, excepting in one spot a little below the sternum. Here very slight pressure on one particular point induced a fit of screeching which indicated a definite localised trouble. On passing the finger very gently over the tender place I distinctly felt a point which was slightly movable and which was evidently the source of the pain. I at once made a slight incision through the integuments, when to my surprise a little black point protruded from the wound. This, with a pair of small forceps, I drew out very gently, and to my astonishment I withdrew a small bundle of about 2 inches long, quite black, which I ascertained to be a needle wrapped up in thread. This was at once recognised by the mother as a glover's needle which the child must have swallowed while crawling about the floor, and which had worked its way outwards through the coats of the stomach. The operation over, the child fell fast asleep and recovered in two or three days after parting with this dangerous encumbrance. My wife, who had taken possession of the child during the operation, perfectly remembers this incident which occurred about 50 years ago.

I am, Sir, yours faithfully,

Worthing, August 20th, 1911. I. D. CHEPMELL.

*** We do not see any reference to the episode in Dr. Chepmell's interesting letters while he was our valued correspondent in Paris. Dr. Balgarnie writes that the scar at the great curvature of the stomach was situated 1½ in. from the pylorus, and not 4½ in., as printed.—ED. L.

SOME POINTS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Whilst enclosing a copy of my annual report, I should like to observe that the perplexities connected with the treatment of pulmonary tuberculosis seem to increase as the years roll on. Personally, I am inclined to think that there are so many differences of opinion amongst authorities because a large number of persons who treat this disease take no precautions to discover whether the disease is active or not. The only method of which I am aware for ascertaining whether the disease is still active or not is to take the rectal temperature before rising in the morning, and if it is not as low as 36·5° C. (97·7° F.) assume that the morbid processes are still progressing; in arriving at an estimate of the patient's condition very little attention should be given to the patient's remarks about improvement or otherwise, for, as a rule, when the disease is easily curable the subjective symptoms are not marked. From a careful study of the previous histories of these cases I have been forced to the conclusion that chronic fibroid phthisis is the product of exercise taken at a period when the temperature is slightly raised—that is to say, when the products of the tubercle bacillus are of low virulence. If the fever be greater than this, the subjective symptoms will also be considerable, and night sweats will usually be occurring; if exercise be persisted in, a chronic fibroid phthisis will not, as a rule, be produced, but a large amount of caseous material; these cases may either proceed to a galloping consumption, or the disease may become arrested, leaving the patient in a crippled condition, the amount of crippling being directly proportionate to the antecedent damage. Fibroid destruction of a lung, following upon pleurisy, would seem to be due to an irritant of low virulence acting over a long period. Now if it be granted that all so-called idiopathic pleurisies are tubercular, it is not fair to assume that all cases of pleurisy will develop into what is generally understood by the term pulmonary tuberculosis. I suppose a very large number of these cases go on to complete and natural cure. I would suggest, however, in cases of pleurisy of this kind, that the patients be kept in bed until their temperatures reach 36·5° C. (97·7° F.) before rising in the morning. This method would, I am sure, prevent the development of a large number of serious cases. Of course in the event of such treatment not being successful, recourse might then be made to tuberculin

or sanatorium treatment—or both—as the judgment of the practitioner might decide.

Compared with the temperature taken before rising, temperatures taken at other times in the day are comparatively unimportant. The first thing to be done, therefore, in treating a case suspected to be suffering from pulmonary tuberculosis, is to put the patient in bed and then find out the rectal temperature before rising in the morning. In April, 1909, I published an article on "Graduated Rest in the Treatment of Pulmonary Tuberculosis," in which I advocated the strict resting and seclusion of all early cases. I was not then referring to what are ordinarily understood by febrile cases, which have been rested in all properly conducted sanatoriums since the days of Dettweiler. The treatment by means of the production of an artificial pneumothorax all tends in the same direction, though I imagine that when possible it will be preferable for patients to lie quietly in bed, apart from their relatives, for a week or ten days, to, at some later period, going to the risk and trouble of an artificial pneumothorax, which may have to be kept in operation for a period of years.

I am afraid that at the present time there is a good deal of indiscriminate administration of tuberculin, and this is often done without taking a rectal temperature before rising in the morning. If such a temperature were taken the variations noted would surprise a good many who administer tuberculin without this precaution. I may say, in passing, that after very considerable experience I have never known a case of pulmonary tuberculosis do really well in which the rectal temperature before rising did not approximate to 36·5° C. (97·7° F.). Of course, I am quite aware that a considerable number of patients who have a temperature of this kind are by no means cured; these are, as a rule, chronic cases in which the disease has existed for some considerable time (often for years).

Furthermore, there is always some disadvantage in treating patients with the hair of the dog that bit them, insomuch that if benefit follows reactions after suitable doses, how long are we to continue giving these patients a little more of the disease, and how far are we justified in working up the disease to fresh activity? Latterly I have been administering tuberculin in such doses that no reaction is produced except, perhaps, at the seat of injection. As time only will show what effect this method will produce, I am unable to state further than that in some cases the appetite is improved and there is a more progressive gain in weight. I have no doubt that in the majority of us, any tubercle we may acquire is not ordinarily cured by means of a violent reaction. I have seen great benefit follow violent reactions due both to tuberculin and to the natural disease. Unfortunately, in both cases I have more often seen harm follow.

I have tried giving continuous inhalations of carbolic acid, but so far I have not been able to obtain the results sometimes claimed for this method of treatment. So far as I can gather, the first lot of successful cases published by Dr. Lees referred to early cases and not mixed infections; latterly I have noticed that this method has been claimed as being specially useful in mixed infections. I have seen very little evidence of this, but have found that a respirator worn without any drug being used produces benefit when cold east and north-east winds have caused irritation of the air-passages; in this case the inhaler acts as an extra piece of trachea or of mouth, as the case may be. Really incipient cases generally tend to improve markedly if they cease from their employment only.

I put forward tentatively the following propositions in the hope that they may be of assistance to others, who, like myself, are daily worried by the numerous cures put forward both by the profession and by the lay public. 1. That everyone in an industrial community, by the time he reaches 20 years, has suffered from tuberculosis. 2. That the majority of persons get well without symptoms—that is, without reactions. 3. That a proportion get well after well-marked symptoms—that is, after pronounced reactions. 4. That, relative to the whole number of cases, a few of the patients recover after being looked upon as hopeless. The enormous number of actual cases of this disease accounts for so many of this class of case cropping up. 5. That in early cases it is usually impossible to tell when activity has ceased unless a rectal temperature be taken before rising. 6. That the disease tends to cure itself. Upon this factor is founded the rationale of treatment by tuberculin. 7. That in treating tuberculosis of the lung the effect on surgical tuberculosis of tuberculin must not be too much given in evidence. 8. That from the onset of hæmoptysis or pleurisy years may elapse, during which time the patient may walk about either in perfect health or in apparent perfect health.

Early cases of pulmonary tuberculosis may be benefited by the judicious use of tuberculin, and many advanced cases may perhaps be prevented from occurring, but if the duration of the disease before many patients at present elect to come to a sanatorium be considered it will appear that a very considerable number of years must elapse before the precise value of this treatment can be ascertained. One thing, however, seems to me quite clear, and that is that no treatment can be considered as worth while which does not tend to produce a temperature of 36·5° C. (97·7° F.) before rising in the morning.

Finally, as a warning, I would remark that the restoration to permanent working capacity of patients of the kind that at present come to this sanatorium, using every method of treatment that has been suggested, is very difficult.

I am, Sir, yours faithfully,

EDWARD E. PREST.

Ayrshire Sanatorium, New Cumnock, August 21st, 1911.

THE SCIENTIFIC PRINCIPLES OF INHALATION.

To the Editor of THE LANCET.

SIR,—In the LANCET of May 21st, 1892, the Scientific Principles of Inhalation were submitted to your readers, and the state of knowledge on that subject was fairly considered. Dr. Baxter, in his report as medical officer of the Privy Council, had stated that "it was well-nigh impossible to obtain an atmosphere containing a given percentage of the vapour," and it seemed from his experiments upon the action of certain disinfectants on vaccine lymph that practically no effect was obtained by them in their action as vapours. As it seems probable that some attention is going to be given to this subject I venture to refer to the communication you were so good as to publish in THE LANCET nearly 20 years ago. The observations made by Dr. Piesse and Mr. Johnston were published in the *Medical Press and Circular* on June 11th, 1885. When I directed the attention of the late Sir Richard Quain to the very unsatisfactory class of agents described in the British Pharmacopœia under the general title of "Vapores" he decided that they must be excluded from the new edition which was near publication. Let us hope that the time has come when the therapeutic value of vapours when properly prepared and administered is going to be studied and turned to use in the treatment of a large class of maladies.

I am, Sir, yours faithfully,

August 25th, 1911. ROBERT LEE.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Death-rate and the Strikes.

THE deplorable state of affairs consequent on the strike, with the practical cessation of nearly all work for more than a fortnight, led to a considerable increase in the death-rate of the city, as reported at the meeting of the health committee held on August 24th. Owing to the strike of the corporation scavengers, the dirty condition of the streets and the accumulation of refuse from the ash-pits and middens became a public danger. The death-rate of the city for the preceding week was 27·1 per 1000, as compared with 16·5 per 1000 in the corresponding week of last year. Of 390 deaths, zymotic diseases claimed 285 victims, of whom 191 were under 12 months. The deaths in the corresponding week of last year from infantile diarrhœa were 27, as compared with 157 last week. Probably the hot summer with its prolonged drought was responsible in a measure for a proportion of this high death-rate. The medical officer of health, in reply to the question of how Liverpool compared with other cities in England where strikes had occurred, replied that there was a very wide range in the death-rate, but he was afraid that the

greatest injury had been done where strikes and labour disturbances prevailed. The carriage of sterilised milk supplied by the corporation for the use of infants of the poorer class had been seriously interfered with. The city presented the appearance of a besieged city with its barricaded shop windows. This precaution was adopted as many shops, especially in the lower parts of the city, were looted by the hooliganism which disgraced the city. The strikers are acquitted of taking part in this ruffianly conduct.

English Cholera in Mid-Cheshire.

The Northwich urban and rural areas are suffering from an epidemic of English cholera, or summer diarrhœa, the medical officer of health estimating the cases at fully 500, chiefly children under 18 months. The deaths have numbered 50. The outbreak is attributed to the long spell of hot weather, with the attendant contamination of milk and other food-supplies and interference with drainage. The medical officer of health has advised the boiling of all milk consumed by children, and regards flies as a fruitful cause of spread of infection.

August 29th.

BRISTOL AND THE WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENT.)

Serious Accident to a Bristol Surgeon.

Dr. H. G. Kyle, one of the surgeons to the Bristol General Hospital, met with a serious accident while travelling through Shropshire on a motor cycle. The exact reason for his fall is not known, but the resulting injuries to the head and right shoulder are very severe, and his condition gives cause for grave anxiety. Dr. Kyle has a wide circle of friends in Bristol, and they are receiving information daily from his relatives who are staying with him at the house to which he was taken after his fall.

A Plague of Crickets.

During the hot weather the Bristol health committee was confronted by an unusual problem. Robertson-road, Eastville, was for several weeks swarming with crickets. The centre of attraction appears to have been a heap of refuse deposited by the authorities at the neighbouring workhouse, but the houses in this and other streets were freely invaded by hosts of insects. Various insecticides were tried; carbolic acid and lime were ineffective, and petrol, which was more efficacious, was too costly for wholesale use. Fortunately, the end of the trouble came when the hot weather passed; but while it lasted the people of the district were put to very serious inconvenience.

The Bristol Guardians and Hospital Accommodation.

The Bristol board of guardians is at present much exercised as to the means of providing adequate hospital accommodation. A scheme for demolition of existing premises on a large scale with erection of a new building has been passed, but it is being opposed by a strong minority, who plead for a smaller and more economical change in view of the present uncertain state of Poor-law affairs. This difference of opinion has been productive of many debates, some of them more conspicuous for heat than light. There is no doubt that it is a very serious matter, for the scheme which has received the sanction of the majority is a costly one. It is an interesting fact that one part of the doomed premises at Fishponds was built in the eighteenth century as a prison, and was used for years for the incarceration of prisoners of war.

Medical Practitioners and Public Servants.

At the last meeting of the Bristol board of guardians a letter was read from the guardians of the Merthyr Tydvil Union enclosing a copy of a resolution adopted by them as follows:—

> That this board, being of opinion that it is better to pay for the prevention of disease rather than for the cure of same, believes that the time has now arrived when the medical practitioners of this country should become public servants. That copies of this resolution be sent to the President of the Local Government Board, local Members of Parliament, and to all boards of guardians in the country.

The Bristol guardians, after a slight discussion, dropped the matter.

Rural and Urban School Children.

The school medical officer of Wilts (Dr. R. H. Bremridge), in his annual report for 1910, which has been recently issued, states that the rural children are superior to the urban children in every physical characteristic of which he had taken notes, the rural standard of cleanliness is better, and the advantage of the rural over the urban area in the matter of height and weight was demonstrated.

The Royal Albert Hospital, Devonport.

At a special meeting of the governors of the Royal Albert Hospital it was decided to realise stock value £1083 and to devote the proceeds to the general maintenance fund. It was stated that, under the most careful management, the expenditure had for many years exceeded the income by about £800 per annum, and the present adverse balance against the hospital was £2640.

The Water-supply of Ilsington (Devon).

A Local Government Board inquiry was recently held at Ilsington into an application of the Newton Abbot rural district council for sanction to borrow £4900 for the purpose of water-supply.

Spotted Fever in the West of England.

At the last meeting of the Holsworthy (Devon) rural district council the medical officer of health (Mr. W. G. Gray) reported eight additional cases of "spotted fever," with three deaths. He asked the council to provide shelters and isolation accommodation, but this was not granted, and the matter was adjourned for a fortnight. There is a feeling of great dissatisfaction at the attitude of the Holsworthy rural district council in not supporting their medical officer of health, whose action has been warmly commended by the Local Government Board inspector (Dr. R. J. Reece), and also by the medical officer of health of Devon (Mr. G. Adkins). The local press has made several strong comments upon the council, and the *Western Morning News* urges the interference of the Local Government Board. The Tavistock (Devon) rural district council, owing to two cases of spotted fever having occurred in its area, and acting upon the advice of its medical officer of health (Mr. C. C. Brodrick), decided to provide isolation accommodation for the district and to make the disease notifiable.

Sanitary Inspectors and the Local Government Board.

At the last meeting of the Redruth (Cornwall) rural district council it was reported that the Local Government Board had refused to sanction the appointment of a certain sanitary inspector for a portion of the district. The Local Government Board stated that its inspector (Dr. S. W. Wheaton) had informed the Board of the unsatisfactory state of the district, and it was not willing for such a state of things to continue. The Board therefore urged the council to appoint a qualified sanitary inspector for the whole district, and to give him an adequate salary.

Death of William Steer Riding, B.A. Lond., M.D. Edin., M.R.C.S. Eng., L.S.A.

Dr. William Steer Riding died at his residence, "Stamlands," Buckerell, Devon, on August 19th, in his seventy-sixth year. Dr. Riding, who graduated as M.D. at Edinburgh University in 1857, had at one time an extensive practice in London, where he resided at Endsleigh-gardens, Euston-square. He retired from active work about 20 years ago and took up his residence at Buckerell, near Honiton. He was very popular in the district, and the poor have lost in him a good friend. He leaves a son and two daughters to mourn their loss.

August 29th.

WALES.

(FROM OUR OWN CORRESPONDENT.)

The Treatment of Consumption in Newport.

FOR several years past the Newport board of guardians has had special accommodation for consumptive patients. A large house, apart from the workhouse and in its own grounds, has been utilised for the special treatment of these cases, and by the erection of huts as many as 37 patients can be accommodated at one time. The corporation has erected a wooden pavilion in the grounds of the isolation hospital for the accommodation of ten patients, and in his annual report for 1910 the medical officer of health, Dr. J. Howard-Jones, states that during the year there were treated in this pavilion

102 patients. Unfortunately, as in previous years, the majority of the patients were in an advanced stage of the disease. Some had not sought advice until their chances of recovery had become imperilled, while others, though under medical treatment, had not been informed until a late period of the nature of their ailment. Notwithstanding this drawback, Dr. Howard-Jones considers that the results attained by the segregation of cases in an infectious stage fully justify the cost entailed. As a rule, each patient stays in the institution for one month; in exceptional cases for a longer period. On returning home they are encouraged to keep in touch with the medical officer of health. They are visited in their homes and are urged to carry out the lessons inculcated during their stay in the sanatorium.

The Nursing Arrangements in Dolgelly Workhouse.

At a recent meeting of the Dolgelly board of guardians Mr. Hugh Williams, Poor-law inspector of the Local Government Board, urged very strongly the appointment of a trained nurse for the workhouse infirmary. At present, he said, only about 20 per cent. of the workhouses of the country were unprovided with trained assistance. The rate of pauperism depended upon the way the Poor Laws were administered, and there was no doubt that if the amount of sickness could be reduced by proper nursing a considerable saving would be effected in the cost of relief. The medical officer, Mr. John Jones, endorsed the recommendation and stated that the patients then in the infirmary required careful and skilled attention. The proposal was opposed by several members of the board, apparently on financial grounds, though one guardian openly avowed that he had no faith in doctors or nurses, and stated, in all seriousness and as an unanswerable argument, that there were several cases in which patients had died after being nursed. In the end decision on the question was postponed for two months.

West Wales Joint Asylum.

The dispute which has been going on for many years past between the county authorities of Cardigan, Carmarthen, and Pembroke, with respect to certain charges connected with the asylum belonging to those bodies, has at last been brought to a satisfactory termination. Many improvements, including arrangements for proper classification, are now rendered possible, and suitable additions to the asylum buildings will lessen the existing overcrowded state of the institution, in which the number of inmates on March 31st last was 687. In his recently issued annual report the medical superintendent, Dr. John Richards, refers to the importance of keeping under surveillance patients discharged as recovered. He suggests that they should be medically supervised and, when necessary, monetarily assisted for several months after leaving the institution. One male patient died during 1910 at the age of 106. He had been an inmate of the asylum from the date of its opening in 1865.

The Rhondda Health Report.

The population of the Rhondda urban district at the last census was 152,798, an increase of 39,063 upon that recorded in 1901. There are now only 18 county boroughs and one urban district, that of Willesden, with populations exceeding that in the Rhondda valleys. In his annual report for 1910 the medical officer of health, Dr. J. D. Jenkins, refers at length to the infantile mortality, which has always been high in the district, averaging in the past ten years 178 per 1000 births. In 1909 it was 129 per 1000 and 136 in 1910. During these two years two health visitors have been employed in the district. It appears, however, that their work was restricted to one portion of the district in which the infantile mortality rate in 1910 was 142 per 1000, while in the remaining portion of about the same population the rate was only 130 per 1000. The death-rate from diarrhœa, which was 0·29 per 1000 in England and Wales in 1910, was 0·83 per 1000 in the Rhondda, and of those who died from this cause over 80 per cent. were under one year old. As the Rhondda is essentially a water-carriage locality, and as there is no storing of household refuse in the immediate vicinity of dwellings, it is necessary to seek for some cause of this prevalence of diarrhœa other than that which is to be found in the northern counties—namely, privies and dustbins. It appears, however, that although there is a daily removal of refuse from the dwellings in the Rhondda, it is carted to huge mounds at no great distance, and Dr. Jenkins states that these "tips" afford a suitable breeding-ground for flies, an excessive number being noticeable in the houses nearest to the accumulated refuse. He asserts that the abolition of the "tips" will be instrumental in reducing the death-rate in the locality concerned, and especially so amongst young children. There are no less than 200 loads of refuse to be dealt with daily, only about one-tenth of which is disposed of in the destructor erected in 1900. Power has been sought, however, to purchase land and to erect destructors in four different parts of the district, and also to use the existing tramways to convey the refuse to the destructors. The erection of these destructors is without doubt the most urgent matter claiming the attention of the council. The staff of six sanitary inspectors, which has not been augmented for 12 years, and which has only been increased by one since the time when the population of the district was half that of the present time, appears quite inadequate for the proper carrying out of the duties imposed by the Local Government Board. Dr. Jenkins states that among the subjects which have to be neglected owing to the insufficiency of his staff are the inspection of meat and food supplies, measures specially aimed at the prevention of pulmonary tuberculosis, inspection of the gathering grounds of the many different areas of water-supply, and the sanitary administration of workshops and workplaces.

August 29th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Proposed New Nursing Home for Edinburgh.

THE executive committee of the proposed new nursing home for Edinburgh has acquired a block of three houses in Chalmers-street, Edinburgh, as the site of the new home. Of the £10,000 required a sum of £8640 8*s.* 11*d.* has now been subscribed. The home, it is expected, will be self-supporting.

Voluntary Health Visitors of the City of Edinburgh.

The work of the voluntary health visitors in connexion with the Public Health Department of the city of Edinburgh continues to maintain the satisfactory level of efficiency which was reached in the first years after the initiation of the scheme. The medical officer of health, in his report for 1910, announces a reduction in the rate of infantile mortality from 113 in 1909 to 103 in 1910, and states: "There can be little doubt that, in addition to the general improved sanitary condition of the city, much of this result has been obtained through the sustained efforts on the part of the large body of voluntary lady health visitors who for some years past have dealt with this whole question in a manner which can only be characterised as thorough in every detail." The Notification of Births Act gives to the public health department knowledge of the birth of a child within 36 hours, and in the cases where notices come from homes where no paid medical man has been in attendance visitation of the infants is undertaken. As soon as possible after receipt of the notification the official lady health visitor pays an initial visit, and then passes on slips with the information to the secretaries of the voluntary visitors. The secretaries receive the notices each week, distribute the cases to the captains of the various areas, and the captains in turn distribute them to the individual visitors. The visitors are required to visit fortnightly—and much oftener in case of illness—while after each fortnightly visit a report of the condition of the child has to be made out on a printed form and given in to the public health department. In the end of 1910 there were 267 ladies engaged in the work and 1249 infants were under visitation. The total number visited during the year was 2395. During the winter of 1909–1910 three sets of five lectures were delivered to the visitors, the subjects being "Infant Life," by Dr. Beatrice Russell; "Infection," by Dr. John Thomson; and "Some Methods of Charity," by Mrs. George Kerr, honorary secretary of the City of Edinburgh Charity Organisation Society. The visitors attending the lectures were charged 2*s.* 6*d.* for each set, and this charge more than covered the expenses of the lectures, including the lecturers' fees. Voluntary health visiting, as carried on in Edinburgh, is a demonstration of how satisfactory and efficient such

work may be if well organised. The object the visitors have set before them is to reduce the rate of infantile mortality in Edinburgh to the lowest possible figure.

Glasgow Western Infirmary Extensions.

An important addition to the buildings of the Western Infirmary, Glasgow, is to be formally opened by Sir James Barr, on Oct. 13th. The addition comprises a clinical laboratory erected at a cost of £5000, given some time ago by an anonymous donor. The laboratory will be not only of great service educationally, but will, it is confidently hoped, prove of much assistance in the curative work of the infirmary. Its equipment has formed the subject of the fullest possible inquiry, including visits to several of the best-known continental hospitals. A further extension scheme is on foot for the hospital, and one which is urgently required. This scheme aims at the construction of a reception ward with operating theatres overhead. This building will fill up the gap between the main building and the new wing, and from the point of view of administration alone the linking-up of these buildings will be of considerable convenience. Apart from this consideration, a commodious reception-room is urgently needed. The sum aimed at to cover the expense of the further extensions is £80,000, and while a considerable proportion has already been subscribed, fully £20,000 more are required to complete the cost of the scheme.

Leanchoil Hospital, Forres.

At a recent meeting of the managers of the Leanchoil Hospital, Forres, it was intimated that a legacy of £1000, free of legacy duty, had been left by the late Mr. George Cunningham of Forres, to found a bed to be called "The George Cunningham Bed."

New Infirmary, Perth.

On the afternoon of Saturday, August 26th, in the presence of a distinguished and representative company, the memorial stone of the new infirmary for the county and city of Perth, which is in course of erection at Tullylumb, Perth, was laid by Mrs. C. A. Murrey, Taymount, wife of the chairman of the institution. In the new infirmary there will be 120 beds, and of the sum required, which is estimated at £36,190, £33,022 have been subscribed, leaving £3168 to be raised. It is also proposed to erect and endow a children's ward, as the city and county's memorial to the late King Edward, the cost estimated at £2000.

August 29th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Old Age Pensions in Ireland.

THE recent annual report of the Local Government Board on the working of old age pensions makes sad reading. From the date of the Act coming into operation until July 1st, 1911, the total number of appeals received by the Local Government Board actually numbered 49,190. It is deplorable to find, as pointed out in this report, a tendency on the part of almost every small landholder in Ireland, on reaching the age of 70 years, to transfer his farm to some member of his family and then claim a pension as a matter of course. The fact is, in Ireland the Old Age Pensions Act has totally undermined the independence of a large number of people, and to-day there are thousands in receipt of pensions in Ireland who neither need nor deserve them. Again, in this report it is shown that many representations from boards of guardians have been made to the Local Government Board, complaining of their being unable to recover any part of the cost of the maintenance of an old age pensioner who temporarily seeks medical relief in a workhouse infirmary, and urging that Section 6 of the Act should be amended so as to enable them to draw the pension during the pensioner's stay in the institution. It is clear from the report of the Local Government Board that the Old Age Pensions Act has raised problems in Ireland which will cause great trouble in the near future.

Death-rate of Dublin.

In the annual report of Sir Charles Cameron, medical officer of health of Dublin, the death-rate of Dublin is shown to be 10 per 1000 higher than the average of the great English cities, and practically double that of London. Moreover, it is high not only among the poorer classes, but among the professional and well-to-do middle-classes. The cause lies, doubtless, in the housing of the poor. There are 211 cases in which nine or more people are living in one room, nearly 4000 with six or more, and nearly 10,000 with four or more. It is obviously impossible to obtain health or decency under such conditions. The various housing schemes of Lord Iveagh, the Dublin corporation, and others have afforded little relief, since they cater for the artisan rather than for the labourer and the very poor. The city architect recently made the very proper suggestion that to cope with the housing question thoroughly all hope of making any scheme self-supporting must be abandoned. The return to the community must be looked for in the health of its citizens and not in money. The corporation, however, spends money lavishly at present in all its departments, and taxation is at its limit, so that it will not be easy to gain consent for an expensive housing scheme. In the meantime, much might be done by a rigid system of inspection of the tenement houses, with enforcement of the by-laws, where any default is shown.

Dispensary Medical Officers and the Insurance Bill.

A meeting of "dispensary doctors"—i.e., Poor-law district medical officers—was held in Dublin during the recent Public Health Congress, to consider the special menace to their interests by the National Insurance Bill. The proposal of the Irish Parliamentary Party—viz., to omit medical benefits from the scheme as applied to Ireland—is regarded as particularly dangerous to Poor-law medical officers. If sickness benefits are to be given without medical benefits the Health Committees will require medical certificates and other safeguards against malingering, and are likely to demand, as the Bill gives them power to do, such extra services connected therewith from the dispensary doctors. Resolutions were therefore passed that the Poor-law medical officers of each county should meet to discuss their position and prospects under the Bill, at a meeting to be held in Dublin early in October.

On August 17th a conference was held in the Engineers' Hall, Belfast, to which trade union and friendly society officials were invited, to make recommendations as to amendments necessary to render the Insurance Bill applicable to Ireland. The President of the Trades' Council occupied the chair at this conference, which was entirely composed of members of the Labour Party, as the invited representatives of the Friendly Societies were unable to attend. The meeting disclosed the opinions of the working classes, and the views were made public of a deputation from the Belfast Trades and Labour Council which had interviewed in London the Chancellor of the Exchequer and the Labour and Irish parties. The chairman said he had reason to reconsider the good opinion he originally formed as to the Bill, and he was coming to the conclusion that "all that was left of the fine scheme introduced in such glowing terms by Mr. Lloyd George—at any rate, so far as it applied to trades unionists in Ireland—was not worth fighting for. Further, he did not see why they should be expected to 'kow tow' to the Friendly Societies." A member of the deputation to London said that Mr. Redmond had told them that 75 per cent. of the people were against the medical benefits part of the Bill. The agricultural portions of the country were opposed to the medical benefits, which would be of value to only five counties in Ireland. When the Irish Party were asked if they could have that part of the Bill made applicable to Ulster alone they were told that that the matter would receive sympathetic consideration. Another speaker said Mr. Lloyd George told them he would be guided by the votes of the Irish Members, and that party was going to exclude Ireland from medical relief benefits and to maintain the present dispensary system in Ireland, though giving Englishmen the right to choose their own doctors—a somewhat strange attitude for the Irish Party to take. Finally, a resolution was put forward that Ireland should not be excluded from medical relief or unemployment benefit under the scheme, and that out-workers should not be excluded from the operation of the National Insurance measure; to which an amendment was offered "that while this meeting approves of certain of the privileges of the National Insurance scheme, it demands the withdrawal of the

present Bill as being unsuited to the workers." After a long discussion the conference, at which there was a large attendance, was adjourned until the next meeting of the Trades Council. On August 12th at a meeting in Thurles of the dispensary doctors of county Tipperary, resolutions were passed to the effect that if medical benefits were deleted, while sickness benefits were retained in the Insurance Bill as applied to Ireland, the dispensary doctors' medical work would be enormously increased without provision for proportionate remuneration. So far as Ireland is concerned, in dealing with the Insurance Bill next autumn Parliament may adopt one of three courses: (1) Decide that it will not apply to Ireland; (2) delete medical benefits; or (3) arrange that in Ireland the Bill be so altered as to make one part apply to the industrial centres and the other to the agricultural districts. Unquestionably the worst and most unworkable scheme would be the second.

Registration of Milk Purveyors.

At the Belfast summons court on August 21st a farmer in county Down, who daily brings milk into Belfast, was proceeded against for not being registered as a purveyor of milk under the Dairies, Cowsheds, and Milkshops Order, 1908. The defence put forward was that registration in Belfast was not required as this had been done in county Down; but the corporation, which prosecuted, contended that the registration of the vendor was required in the district in which the milk was sold—in this case Belfast. The corporation is rightly seeking to establish power of inspection over all milk-carts from which milk is sold in the city. Only about one-half of the dairymen residing outside the city who vend their milk in Belfast are registered with the corporation. The case was therefore a test one, and it is satisfactory to find that the magistrates convicted and also refused to state a case for the higher courts, although the legal adviser of the milk vendor said he would serve notice for a case.

Death of John Henry Harbison, M.B., B.Ch., B.A.O. Q.U.I.

Widespread regret is felt among the younger members of the medical profession in Belfast at the tragically sudden death of Dr. John Henry Harbison, demonstrator of physiology, in the Queen's University, Belfast. While on a visit to a brother in Liverpool he was attacked on August 12th with tonsillitis, to which he succumbed on August 14th. He was buried in Cookstown, county Tyrone, on August 16th. A native of Cookstown, Dr. Harbison received his early education at St. Patrick's Academy, Dungannon, and Blackrock College, Dublin. A distinguished intermediate exhibitioner, he entered Queen's College, Belfast, where he was a scholar, and graduated in 1910 as M.B. at the Queen's University, Belfast. He subsequently was house surgeon in the Mater Misericordiæ Hospital, and when his term of office there expired he was appointed demonstrator of physiology at Queen's College, Belfast—a post he held at the time of his decease. A man of exceptional ability, a hard worker, and with a very amiable character, Dr. Harbison was most popular with all who came in contact with him.

Death of Robert Chambers, L.R.C.P. Irel., L.R.C.S. Eng.

The death of Mr. Robert Chambers occurred at his residence, Westwood, Ravenhill Park, Belfast, on August 28th. Mr. Chambers, who was born in county Tyrone, studied in Dublin and Edinburgh. He settled in practice in London, where he was superintendent of the Marylebone Medical Mission, physician to the Church Army Training Homes and Shaftesbury Institution, and physician to the London Medical Mission. Mr. Chambers came to Belfast on his retirement from the active duties of his profession a couple of years ago. He was always deeply interested in religious work, and took a prominent part each year in the well-known Keswick Convention. He was devoted to floriculture, being an enthusiastic rose-grower. General sympathy is felt for his widow.

August 29th.

DEVON CHESS CHAMPIONSHIP.—Mr. Robert Dunstan, M.R.C.S., L.S.A., of Torquay, has won the Winter-Wood Cup, which will be presented to him at the annual meeting of the Devon County Chess Association.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Period of Congresses.

AUGUST is the month of congresses. France has had four during the past few weeks. The French Association for the Advancement of Science, one of the most important of scientific congresses, held its annual meeting at Dijon. Medical subjects constitute one of its sections, and one which seldom lacks interesting communications, especially from provincial savants. For instance, this year M. de Janicot, chief of the laboratory at the Lyons Faculty of Medicine, dealt with the teaching of puericulture, which, according to him, should be entrusted to female teachers. Dr. Ziffel, a professor of the Medical School at Dijon, insisted on the point that no child should be admitted into any school until after it had undergone a medical examination. In the section of anthropology Dr. Marcel Baudouin presented a general classification of the human osseous lesions of the neolithic age. Finally, in the section of medical electricity M. Weill, M. Vincent, and M. Barre of Paris presented a communication on Electrical Examination in Diseases of the Ear. The members of the Congress attended the exhibition of medical electricity open at Dijon during the Congress.

The French Congress of Stomatology was opened in Paris on July 31st at the Faculty of Medicine in the Grand Amphitheatre before a numerous attendance of French and foreign medical men. M. Landouzy, Dean of the Faculty of Medicine, delegate of the Minister of Public Instruction and Fine Arts, presided over the first session and delivered a presidential address that was highly appreciated. The principal communications presented were those of M. Tellier (Lyons), on Pyorrhœa Alveolaris; of M. Bezo (Paris), on Classifications in Orthodontia; of M. Cruet on the Unity of Accidents of Dentition; of M. Caillon (Lyons), on the General Principles of Bucco-dental Prophylaxis; of M. Hallopeau, on the Local Treatment of Syphilides of the Tongue; of M. Béal (Lille), on Tetaniform Accidents of Dental origin; and of M. Rousseau-Decelle, on the Influence of Bucco-dental Irritations on the Production and Evolution of Dermatoses. M. Chaminade (Bordeaux) discussed the conclusions to be drawn from a statistical examination of 1000 chloroform anæsthesias and 1500 anæsthesias with ethyl chloride. On August 3rd a closing banquet was held, at which a large number of medical men were present.

About the same period the Twenty-first Congress of Alienists and Neurologists of the French-speaking countries opened at the Hôtel de Ville, Amiens, under the presidency of Dr. Deny, physician to the Salpêtrière, with delegates from the Ministries of the Interior, of War, and of Marine, and some 15 representatives of medical societies. The mayor welcomed the members and Dr. Deny responded, while M. Granier, Inspector-General of the Administrative Services, and delegate of the Minister of the Interior, extended the good wishes of the Government to the Congress. The first session was almost entirely devoted to a debate on the report of Dr. Maillart, physician to the Salpêtrière, who discussed the different kinds of psychopathic pains. Dr. Paugniez (Amiens) communicated a series of observations on suggestion by beauty, an influence which, without abolishing the mentality of the subject, exercises an external authority, giving rise to an idea capable of awaking other ideas associated with it, and ending even by determining actions which, if left to itself, the will of the subject would be incapable of accomplishing. He cited in support of his theory the influence of Agnes Sorel over Charles VII. From the time of her appearance at Court Charles VII. rose to the demands of his high position, comported himself with the confidence of a man defended by a talisman, and every year marked a victory. When Agnes Sorel died in 1440 the King forthwith fell back into a life of idleness and debauchery. M. Courtellemont presented a long communication on tumours of the pituitary body, which was discussed by M. Laignet, M. Lavastine, M. Paul Sainton, M. Meige, and M. Dide. M. Dupré and M. Lagre read a paper on the relations existing between hysteria and

mythomania. M. Meige gave vent to some admirable remarks on the correction of functional troubles of speech. The value of the testimony of the insane in the courts was the subject of a very interesting communication by M. Lalaime, physician in chief of the Insane Asylum of Maréville, near Nancy, the paper evoking considerable discussion, in which many took part. This important session closed with a visit to the interesting museum of Picardy and ancient Amiens. It was decided that the next Congress should be held at Easter, 1912, at Tunis, under the presidency of Dr. Mabille (La Rochelle), and that of 1913 under the presidency of M. Arnaud.

Death of Professor Dieulafoy.

French science, and particularly medical science, has sustained a severe loss in the death of the eminent Professor Dieulafoy, Commander of the Legion of Honour, and a Member of the Academy of Medicine, who passed away somewhat suddenly on August 16th. He was born at Toulouse in 1839. He was a pupil of Trousseau, and had a distinguished career both as resident in the hospital and on various hospital staffs. After occupying the chair of Clinical Medicine at the Hôpital-Necker he proceeded in 1896 to the Hôtel-Dieu, where he became successor to Trousseau. In 1909 he was associated with the tuberculosis service at the Hôpital-Laennec. He published a very valuable number of works, among which must especially be mentioned his "Manuel de Pathologie Interne," which has been translated into nearly every language. As a practitioner he was highly talented, and it was he who popularised, in 1869, the aspiration treatment of pleurisy. To an extraordinary intellectual capacity he joined an open mind on all points. Not only a savant, he was also a man of letters and a devotee of the arts, and a collector of modern paintings. His fine character and kindly qualities endeared him not only to his professional colleagues, but to all with whom he came into association.

August 28th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Cholera Epidemic.

THE Marquess Incontri, a young and aspiring member of the Chamber of Deputies, has given notice of the following interpellation to be addressed, on the reopening of Parliament, to the Minister of the Interior:—

> To be informed as to the reasons for which silence has been maintained on the true state of public health throughout the kingdom—silence which gives warrant to the grave apprehension entertained in foreign countries, and which, concurrently with official communications not in harmony with the truth, prevents the people, in their ignorance, from putting in practice the elementary rules, hygienic and prophylactic, indicated by circumstances.

This announcement gives voice to the dissatisfaction shared by Italians at the reticence of the Government during the prevalence of a disease which has already assumed an epidemic character, thus leaving to municipal or communal initiative what ought to be official procedure emanating from headquarters. The interpellation cannot be made till November next when the Chamber meets, but it may, in the meantime, have the effect of bringing home to the Government the duty of frankness, or, to put it plainly, of that moral courage, which was so culpably wanting last year, when the public were kept in the dark as to the presence of cholera on the Adriatic seaboard and were only apprised of the danger when the disease had already effected a landing at the ports of the Two Sicilies. Much has been made, as a motive for this reticence, of the dread of scaring away the foreign visitor or "paying guest," and the association for promoting the influx of that source of revenue has been blamed for inspiring the Government with its "policy of silence." But such, I am credibly informed, is not the fact, any more than it is a fact that the interests of the Exhibition still open in the capital, and not too largely frequented, are similarly responsible.

The late summer and the early autumn are not the season when foreign visitors are expected, and the silence in question, this year as last year, may in truth be set down to the traditional supineness of Latin officialdom when confronted with such visitations. To such lengths has that ill-inspired tradition gone that it was recently announced by the telegraphic agency under Government control that at Leghorn, for example, not a single case of cholera had occurred when, according to the Marquess Incontri, who is in close touch with that seaport, "the disease had for weeks been numbering victims daily," when (still according to that authority) "in all the centres of Tuscany, great and small, the presence of cholera was a theme of general conversation," when, in fact, villas and palatial residences were being abandoned as early as the first days of July! Another significant fact is vouched for by the Tuscan Deputy. "A recent official circular requires every householder to report any cholera case within 24 hours of its occurrence, at the same time charging the medical man not to pronounce or to write the terrible word! The inevitable consequence of all this is the imbroglio in which Italy has been involved with other Powers, whose suspicions of her sanitary state have deepened into something like conviction of the sinister reality, causing trouble for her at their ports, with suspension of all business, commercial and other, notably in the Argentine and the United States. Her rivals, moreover, in catering for the "paying guest" have been only too eager to utilise this "atmosphere of doubt and dread"—hotel-keeping Switzerland, for example, flaunting announcements in its bureaux that "subscriptions are gratefully acknowledged here for the cholera-stricken Italian centres," while at the same time assuring the arrivals that the fruit and vegetables supplied at the table do not come from Italy.

In the towns where cholera has effected a foothold, the authorities, in the absence of direct Government intervention, are left to their own, not always well-inspired, initiative, having to act in isolation, not in harmony with the neighbouring centres, some of them having to depend on the medico-military service only, which has not always the means or the *matériel* for efficacious action. A notable exception to this haphazard procedure is afforded by Leghorn, where the disease has been so prevalent and the panic so great that 30,000 of the population—all, in fact, who had the means—abandoned the city, but where the municipality and those of the citizens who remained exerted themselves nobly, substituting at their own expense pure water from without for the notoriously defective supply hitherto available, till the Government has at length intervened with the subsidy of 15,000 francs in aid of their operations. This subsidy—none too liberal—has been supplemented by the Minister of Marine, who, in addition to the "acqua potabile" imported from Massa and the Maremma, has embarked at Naples, from the pure source of the Serino, 250 tons of water. Such and similar measures have already reduced the mortality at Leghorn considerably, with the result that the fugitives are beginning to return. Genoa, too, and the neighbouring towns are showing the Government an example of what non-official energy can do, although the local conditions in some of these are of the worst imaginable. At Sori, for example, the water-supply has been so bad that during the drought it has to be drawn from a well, the water of which poisoned no fewer than 20 of those who drank it, and as many as 15 died!

The truth is that it is only on occasions of epidemics like this that the majority of Italian communities awake to the insanitary conditions under which they are content to live, while the lessons then inculcated, though taken to heart at the time, are soon forgotten on the disappearance of the visitant. Poverty, too, comes in to embarrass the authorities and often to frustrate their action. At Florence, happily immune from the epidemic, a quantity of fruit was impounded by sanitary order and carted away to a retired spot in the Cascine (the "Bois de Boulogne" of the City of Flowers). But the moment the coast was clear a number of fruit vendors picked up the more "plausible" looking of the peaches, apricots, or apples, washed them in the Arno close by, and disposed of them again! The incident shows with what adverse forces the public hygiene of Italy has to struggle, and explains how ineffective is the fight she makes in such disastrous visitations as the present.

August 27th.

THE BARNSTAPLE (DEVON) BOARD OF GUARDIANS AND THE NORTH DEVON INFIRMARY.—At the last meeting of the Barnstaple board of guardians it was decided to give a donation of £25 to the funds of the North Devon Infirmary.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Precautions against Cholera.

ON account of the threatening epidemic of cholera the Minister of Internal Affairs has ordered that the county magistrates shall provide in every town and village adequate accommodation for any cases that may occur. Persons coming from localities known to be infected are to be medically examined, and if they present suspicious symptoms they will be isolated for at least a fortnight. Villages which cannot afford to erect the necessary buildings from local funds will be helped by the State. In the event of an outbreak the maintenance of the patients and the wages and salaries of the nursing and administrative staff will also be provided at the expense of the State. Circulars have been sent to medical men inquiring whether they will in case of need undertake the treatment of cholera patients for a fee of 20 kronen daily with provision for their families in case of their death from the disease. Last week Dr. Gyula Bölcs, Ministerial Secretary, reported to the Minister of Public Health that all precautions against a possible invasion of cholera have been duly taken in this country, and that the sanitary authorities were in perfect readiness to deal with any cases that may occur.

Protection against Mosquito Bites.

The medical editor of the *Pesti Hirlap* has contributed to that journal an interesting article on the hygiene of holiday-making, in the course of which he deals with the prevention of mosquito bites. He recommends in the first place strong-smelling preparations for the hands and face, especially oil of lavender, oil of lemon, carbolated vaselin, vinegar, and turpentine. There is also tinctura pyrethri rosei, which has a very agreeable odour, does not stain the hands, and retains its active properties for four or five hours. Another very reliable preparation is "zacherlin," which is manufactured in Vienna. It is used as follows: 2 ounces of the powder are stirred up with a pint of alcohol, and the mixture is allowed to stand for one or two hours, after which it is filtered through blotting-paper, and the solution is then ready. This tincture, according to the observations of many medical men in Abbazia, keeps off the mosquitoes for a whole night.

The Average Lifetime of Hungarian Women.

The detailed statistical results of the last census were published at the end of last month, and the figures have been discussed by various medical men from different points of view. A noted Hungarian gynæcologist has examined the data available for comparing the duration of life of men and women respectively, and finds that women live longer than men. The average lifetime of Hungarian women, according to the census taken in 1880, was 42·5 years, but according to the last census it is now 51 years. In some parts of Hungary the improvement is still greater. For instance, in the Szckely district in Transylvania the average lifetime of a woman is 59·2 years. According to this gynæcologist the longer lifetime of women is due to their working less than men. The data of the present census show that there are now far fewer hysterical and nervous women than in former years. Insanity has also decreased slightly. These favourable results are chiefly due to the general prosperity of the country. Wages in Hungary have almost doubled during the last 10 or 20 years owing to the flourishing condition of agriculture, trade, and manufactures.

August 14th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Small-pox and Vaccination in the Province of Quebec.

SMALL-POX during the past few months has been very prevalent in most parts of the Province of Quebec. According to Dr. J. A. Beaudry, chief inspector of the Provincial Board of Health, there are at the present time many thousands of cases of small-pox in various districts in Quebec. For a period of 12 years, the same authority states, small-pox has been present to a greater or less extent in the province. The disease during this time has not exhibited itself in the form of a continuous epidemic, but has existed since 1899, each year in an almost uninterrupted fashion from November up to the month of May. One reason why the disease has not been brought under control is that it has been of a mild, and perhaps of a somewhat abnormal, type. Consequently the condition has not been diagnosed until a large number of persons have been infected, and not infrequently medical men themselves have diagnosed as chicken-pox cases which have really been true small-pox. But of all the reasons which may account for the continued existence and spread of small-pox in Quebec the neglect of vaccination is the chief. The occurrence of several cases of small-pox in Montreal and neighbourhood a few weeks ago brought matters to a crisis, and the Board of Health of the Province of Quebec took action under the powers conferred by Article 3875 of the Quebec Public Health Act. It issued an order that, in view of the increasing prevalence of small-pox throughout North America, as well as in the Province of Quebec, each municipal council of the province shall avail itself within five days of the receipt of this notice of the powers conferred on municipalities by the aforesaid article of the Public Health Act and of those given by Article 608 of the Municipal Code to adopt and enforce the necessary by-laws. These by-laws are sufficiently drastic to ensure general vaccination throughout the Province of Quebec if properly enforced. Although there seemed to be a considerable amount of opposition to obligatory vaccination in Montreal Dr. Beaudry is of the opinion that the antivaccinationists are not strong in the city. As is often the case elsewhere, they make up in noise for what they lack in numbers. Vaccination has not been prosecuted in a sufficiently strenuous manner, because small-pox hitherto has not been of a type virulent enough to constitute an imminent public danger. Indeed, familiarity with the disease has aroused the proverbial contempt. The results of enforced general vaccination in the province of Quebec will be instructive.

Filtration Plant for Montreal.

It is a year since preliminary steps were taken to provide Montreal with a filtration plant in order to ensure a pure water-supply. At first investigations were made as to the possibility of procuring water from the Laurentian lakes. It was finally decided to use raw river water as it was found that both lake and river water would require filtering and that it would be cheaper to filter the river than lake water, mainly because the city has already a plant in working order for the distribution of river water, while in order to obtain a supply from the lakes it would have to go to heavy expense and would nevertheless be compelled to employ filtration. The cost of the construction of a filtration system is estimated at £320,000. The land required for the purpose has been bought at Verdun, and tenders for construction work have been offered by four firms.

August 19th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

City Owned Milk Stations of New York.

THE sum of £8000 has been appropriated this year by the city of New York for the maintenance of municipal milk stations, and the various milk-station organisations have formed an Association of Infants' Milk Stations. This association will avoid the duplication of effort and consequent waste of energy of former days, and afford a central office or clearing-house where close relations between the societies will be fostered, and whence information of value to each station and to the public will be disseminated. The Department of Health, which suggested this association, has admitted to it seven private organisations; in all 89 milk stations are represented. Up to now some 7000 infants have been regularly supplied with irreproachable milk. A physician is in attendance at each station, except where milk is sold by the glass at ½*d.*—less than cost—and gives free advice to mothers and prospective mothers. He is assisted by a nurse or matron, and visits are made to the homes of babies too sick to be brought to the station.

New York's Seaside Hospital for Babies.

Coney Island is said to be famed throughout Europe as a stupendously noisy and vulgar resort for New York's workers, and the idea of a home for sick babies amid such

surroundings is at first sight incongruous. The seaside hospital, however, is an immense success. It was formally opened on July 13th on land which, bought 30 years ago, is now worth £50,000. It stands ready for medical and surgical work, has diet-rooms, milk-rooms, irrigating-rooms, and all imaginable facilities required for treating the diseases of children, and a special fire-proof, isolated, fumigating plant for dealing with contagious disease. The building is constructed in such a manner that one section may be completely separated from the others, being independently heated and lighted, so that it may be run by itself if patients are not sufficiently numerous to fill a greater space. The hospital offers ideal conditions for the segregation and treatment of tuberculous cases, although not especially devised for that purpose. Accommodation is offered for 100 babies with their mothers. The hospital depends upon private charity, which, however, supports it bravely.

Industrial Welfare.

The American Iron and Steel Institute, one of the famous partners in the Steel "Trust," has begun an apparently serious attempt to revolutionise the condition of its labourers. Up to this time it has been the custom to work the men 14, and sometimes 24, hours a day, and to work for seven days in the week, relying upon the constant stream of immigration to keep the ranks filled. Now a beginning is made by ceasing work on Sunday and limiting the hours of daily toil to eight. A physician has been engaged to distribute literature among the 400,000 employees regarding the danger from the house-fly, the advantages of personal and domestic cleanliness, and other hygienic matters. It is believed that this movement will extend indefinitely, and will result in hospitals for those wounded in the course of their work, in the scientific regulation of drainage and so forth among the homes of the men, in the establishment of playgrounds and gymnasiums, and generally in the foundation of a state of unobtrusive paternalism on the part of the newly established "welfare committees."

Accident to Dr. G. G. Rambaud.

On August 2nd a high-powered car driven by Dr. Rambaud, director of the New York Pasteur Institute, and containing nine passengers, turned turtle, throwing out the occupants and injuring them all except a child of two years. Among the passengers was Mrs. Rambaud, formerly Mme. Gerville-Réache, the singer. Dr. Rambaud is at present in a Poughkeepsie hospital suffering from the effects of a perforated intestine, for which a laparotomy had to be done.

Cholera Scare Dissipated.

On August 4th the steamer *Madonna* reached New York from Providence, R.I., after remaining two days in quarantine under careful inspection with negative results. The *Madonna* came from Marseilles, Lisbon, and the Azores, and carried 63 steerage passengers. With this reassuring result the cholera scare may be said to be over, although there is some apprehension owing to the supposed presence of cholera-carriers in various parts of the country. Several supposed cases at the public hospitals turned out to be fright or hysteria, the relaxing effect of which upon the sphincters has been noted in previous scares.

Non-smokers' League.

The Non-smokers' Protective League of America, the latest organisation for the restraint of personal freedom, has been incorporated at Albany, N.Y. Its object is to prohibit the use of tobacco in all public places. One of the incorporators is Dr. Harvey W. Wiley, the Federal food and drug expert, who bids fair to forfeit much of his recently-earned popularity by this step. Many university presidents and professors appear in the list of incorporators.

A Diet Kitchen Association.

Special instruction for the "little mothers" who are in charge of young children is a feature of the summer work of the New York Kitchen Association and its nine branches. The physicians and nurses in charge give instruction in the preparation of milk, and similar matters, every morning to large audiences of the young guardians. On the recreation piers which jut out into the East and North (Hudson) rivers, other audiences of tenement house mothers with their children in their arms and clinging to their skirts listen to lectures on the construction of home-made fireless cookers, the preparation of ices without a freezer, and other hitherto undreamed-of mysteries. By these lectures it is hoped to attack the liquor problem at its root.

August 14th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Fouling of Water-supplies by Natives.

THE national habit of fouling and misusing the supplies of water in India is a matter of astonishment to all sanitarians who visit the country or are permanently engaged in sanitary work; not only do the people persist in their habits in spite of all warnings, but they claim for them a sacerdotal authority which, whether true or false, is none the less disastrous to public health. The sources furnishing drinking water are the rivers, lakes (natural and artificial), streams, tanks, and wells, and all these sources are fouled systematically; that most sacred river, the Ganges, is a vast sewer receiving the sewage of all the sewered towns on its banks, whether by underground or surface conduits, and also dead bodies more or less burnt according to the means of the survivors. The bodies of children are not burnt, and those of persons who have died from epidemic or contagious diseases are hurried by night to the river in order to avoid the attentions of the health inspector. The funeral dirge of the dead as the body is carried to the river may be heard in the small hours by people who sleep in hot weather on the flat roofs of houses. The resident engineer of Cawnpore city had occasion to visit Bhugwat Ghat, the most popular bathing place, on a public holiday. About 200 people of all ages and of both sexes were in the river, and a few yards above the ghat, and in the current flowing to the bathers, was a cholera corpse stranded on a small sandbank. The body had not been burnt, except on the lips with a hot ember, and it was in process of dissection by adjutant (scavenger) birds, which always begin their work by attacking the intestines, the contents of which were carried among the bathers. The latter all washed their mouths and drank of the water, and many carried home pots filled with it for domestic consumption. Others would walk home in their wet clothes even on cold mornings. All this is done in obedience to religious injunction. Hindus have a curious and widespread belief that flowing water purifies itself. The engineer above mentioned found a dhobi washing clothes in the Ganges on a convenient sandbank a few yards below the outfall of a Cawnpore sewer. The reason the man gave for choosing this spot was that the bank was convenient for drying, and that running water purifies itself. The engineer had occasion to inquire how far the sewage of the city could be traced down stream, using samples from above the sewers for comparison. Traces of sewage were found 18 miles below Cawnpore, although at the time only a small proportion of the sewage reached the river. Streams are fouled by every village they pass. The banks close to the stream are used as a public latrine, so that the people may make the special ablution that they say their religion prescribes. Contagion of various kinds may thus pass from village to village. A serious epidemic is generally followed by a pilgrimage to some shrine situated near some tank, river, or spring, and here the national habits come into play and are the cause of much anxiety and hard work among the public health and public work officials, who, to succeed, must combine much diplomacy with their science. There is nothing the Hindu is more jealous of than what he calls his religious customs.

Danger of Open Wells and Tanks.

Public wells are fouled continually from the time they are opened for use until the sickness of the users calls for cleansing. Popular tradition is again against the Hindu, for he believes that all drinking-water should "see the sun" which improves its quality, so his well is kept open; birds build in its crevices and trees grow by its edge, whose leaves drop into the water and decay. Fish and turtles are often put into the well with a view to improve the water, and as each user has his own rope and vessel, which, when not in use, are stored on the ground, the chances of contamination are numerous. It never occurs to the people that as the best water comes from the dark strata at the bottom of a new well, sunlight should not be admitted, and yet at the present time the corporation of Bombay meets with strong opposition from certain of the wealthy but half-educated citizens against the closing of wells, based upon religious grounds that ignore all reason and argument. In Bombay wells have been kept open with the certain risk of fouling, and with disastrous

results. The breeding of mosquitoes and the increase of malarial fever is greatest in the most densely populated wards of the city, where many of the old wells sunk in dwelling houses before the construction of the waterworks in 1859 are still in use. These wells are in a shaft common to every storey of the old houses, so that each flat can draw its own water. Such a well must, of course be kept open, and it furnishes a perfect breeding place for mosquitoes. Bombay has waterworks supplying at the rate of 32 gallons per head per day to the town, but, owing to lax control, the people have been bred in habits of wastefulness, so that the supply is never equal to the demand. Three-fourths of the population, belonging to the coolie class, never use more than 7½ gallons per day, but they will waste ten times that quantity if allowed. Waste has brought about an intermittent supply and the use of roof tanks for the storage of water. These tanks are closed and furnished with ball-cocks and lids. The admirable report on the causes of malaria in Bombay, recently prepared for the Government by Dr. C. A. Bentley, has directed the attention of some of the citizens to their own premises. Many of them found that the lids of their roof tanks had been opened by the servants that the water might "see the sun," and the contents were found to be swarming with mosquito larvæ. This explained why the upper storeys, whose rents were highest, were infested with mosquitoes, while the lower rooms were comparatively free. Many villages and small communities depend for their water-supply on tanks, many of which, although their level may vary, are never dry at any season, and as each season's growth of water plants is followed by a deposit at the bottom of dead vegetation which is never cleaned out, impurities accumulate year by year. In addition there are the dejecta of fish and birds to be added, so that in spite of constant exposure to the sun the tank water is never pure. In the reservoirs of waterworks impurities chiefly of a vegetable kind accumulate. The new Vehar reservoir of Bombay was full in 1859, and was opened in 1860. In May, 1865, owing to deficient rainfall, the working level fell to 44 feet on the water tower gauge. The supply was at that time discoloured, thickened with vegetable matter, and offensive to taste and smell. The deaths registered in that month were 100 per cent. above the average. Forty-four feet of water had already been rendered impure by a very minute weed, one of the confervoid algæ, which in clear water seems to thrive at various depths, and on decaying gives off sulphuretted hydrogen. All permanent open bodies of water in India are invaded by plants, fish, birds, and crocodiles, and in many places the destruction of animal life in municipal reservoirs is strongly objected to on religious grounds by members of the municipal council. The choice of sources of supply for municipal waterworks has been rendered very difficult, for unless the catchment area is in a very sparsely populated district it is open to contamination. This often involves a long and expensive lead for the water.

Methods for Purifying Water.

India is a country in which the purification of supplies of potable water should be effected by chemical means rather than by the open sand filter; but here again popular apprehensions are on the lookout for "defilement," and modern systems, although in successful use in several places—notably at Betmangala, the source of supply of the Kolar gold-fields, where sulphate of alumina has practically abolished cholera—are objected to. The treatment of impure water at waterworks has been a good deal facilitated in America by an adaptation of the Venturi meter, by means of which the corrective, in liquid form, is introduced into the raw water main without the aid of a pump, and at a rate governed by the rate of flow, so that the proportion of corrective in relation to volume of water remains constant. This system is said to arrest deposits on the inner surface of the main, and the precipitate may be separated either in a settling tank or in one of the well-known pressure filters forming part of the main. When a natural head is available this arrangement offers a very cheap combination for a supply of drinking water. The popular idea regarding filtering sand was curiously illustrated in the municipal council of Cawnpore. A deputation of councillors waited on the construction engineer of the waterworks and informed him that, if possible, they would like the filtering sand to be taken from the Ganges as it contained particles that looked like silver, which made the water "more digestive." "Here," replied the engineer, "is a sample of sand straight from the river, and there is a second sample after 27 per cent. of mud has been washed out of it. You may now see the silvery particles with a lens; they are simply mica, which has no chemical affinity for water, but as the sand when cleansed is of a quality suited for filters it will be used to prepare the river water for your use." This explanation did not affect the popular belief, though the deputation returned to the municipal council with a satisfactory report. Among the schemes of primary education that at present are so much discussed in the Indian press there is no subject more deserving of attention than that of drinking-water and the care that should be taken to preserve it from fouling. If properly presented in primary schools it would certainly interest the pupils and would convey to them truths that would be of immediate and lifelong use.

Nastin B in Leprosy.

A report on Experiments with Nastin B on Leprosy, by Major S. Anderson, I.M.S., and Major L. Rogers, I.M.S., with notes by Colonel G. F. A. Harris, I.M.S., has just been issued in Calcutta. The report deals with the trial of the remedy at the Gobra Leper Asylum and the asylum at Purulia. The following are Major Anderson's conclusions: 1. All the cases treated improved in general health and gained in weight. 2. There was usually a marked local reaction in the nodules, or lepromata, and the general reaction was marked in many cases. In the nodular and mixed variety the commencement of improvement in a particular area was signalled by tingling or creeping sensations in the part. Treatment with intervals of rest is necessary; each case must be treated on its merits; and those patients who were most tolerant of nastin, and in whom no reaction occurred, undoubtedly showed the most improvement. 3. The improvement in the anæsthesia patches was generally marked; "all the cases showed an improvement in this respect." 4. Major Anderson's temperature charts show the action of the nastin. It is important to note that the injection of nastin was well borne so long as the air temperature did not exceed 100° F. He therefore recommends its use preferably in cold weather. He concludes by stating that "the nastin B treatment constitutes a real advance, and whilst it undoubtedly aborts the leprous processes in the same way as mercurials do in syphilis, and just as in syphilis one cannot say that the cure is permanent, so the same applies to nastin in leprosy." He considers nastin useful for prophylaxis and can immunise a patient so that he shall be no longer a danger to the community.

Malaria in Bombay.

Dr. C. A. Bentley, after investigating for two years the incidence of malaria in Bombay, has issued a valuable report. It shows an appalling prevalence of the disease, which is estimated at an annual pecuniary loss of 13 lakhs. He makes it clear that the island naturally is not very malarious, but that it is the highly developed portion of the island which is chiefly affected. Figures show that 75 per cent. of the breeding places of the anopheles are the wells and cisterns in and about houses. The Government of Bombay in a resolution says: (1) Measures should be directed against all mosquitoes, but the suppression or reduction of the species of anopheles that carry the disease must first be aimed at; (2) the measures must be so contrived and directed as to bring about not merely a mitigation of the disease, but the eradication of autochthonous malaria from the city; (3) the more rapidly the measures are carried into effect the greater will be the certainty of their complete success; (4) the main sources of infection are at present localised, but failing effective measures they may spread throughout the island. The responsibility for carrying into operation these measures devolves upon the municipal corporation of Bombay, and the Governor in Council trusts that the corporation will address itself to the task with energy and carry through the operations to success without delay. Dr. Bentley shows that, for an annual expenditure that may vary between two and five lakhs, Bombay could be completely freed from mosquitoes. The cost of measures directed against the malaria-carrier alone would not be much more than one lakh annually for the less infected wards, and the three worst infected wards could be adequately dealt with for half a lakh a year. The use of quinine as a prophylactic must not be neglected. It is to be trusted that the corporation will give early effect to this report.

August 8th.

Obituary.

GEORGE FIELDING BLANDFORD, M.A., M.D. OXON., F.R.C.P. LOND.,

LATE LECTURER ON PSYCHOLOGICAL MEDICINE AT ST. GEORGE'S HOSPITAL.

Dr. George Fielding Blandford, who died at his home in Tunbridge Wells on August 17th, was born on March 7th, 1829, at Hindon, Wiltshire, where his father, George Blandford, was a medical practitioner. He received his early education at Tonbridge School and went to Rugby, during the headmastership of Dr. Arnold, in 1841. Among those who entered Rugby in the same term were the late Professor F. J. A. Hort of Cambridge and Senator W. H. Waddington, Prime Minister of France under M. Grévy. In 1848 he matriculated at Wadham College, Oxford, where he took his B.A. degree in 1852, and at once entered on the study of medicine at St. George's Hospital. After proceeding to the M.A. degree in 1854 he qualified as L.S.A. in 1857, took the M.B. of Oxford in the same year, and became M.R.C.S. in 1858. In 1860 he was admitted a Member of the Royal College of Physicians of London. In 1867 he proceeded to the M.D. degree at Oxford, and in 1869 was elected a Fellow of the Royal College of Physicians.

Early in his professional career Dr. Blandford went for a short time to St. Luke's Hospital, Old-street, where he became acquainted with the late Dr. A. J. Sutherland, physician to the hospital and owner of the private asylum for male patients then known as Blacklands House, Chelsea, but later removed to Tooting under the name of Newlands House. Dr. Blandford went as resident medical officer to Blacklands House, an appointment at first intended to be merely temporary; but it was probably this appointment that determined his ultimate life work. In 1863 he entered on private practice, first in Clarges-street, but subsequently removing to Grosvenor-street, and then to Wimpole-street. He continued his connexion with Blacklands House (and its successor Newlands House) as visiting physician, and became physician also to Otto House, Kensington, a similar institution, under the same proprietorship, for ladies. These appointments he held until his retirement in 1909, so that his connexion with these institutions remained unbroken for about half a century. From 1874 to about 1895 Dr. Blandford was the principal proprietor of, and visiting physician to, Munster House Asylum at Fulham. This was ultimately closed and converted into a building estate, in consequence of the change in its surroundings by the extension of London making it no longer suitable for an asylum.

It will thus be seen how closely and importantly identified through his long career as a consultant physician Dr. Blandford was associated with psychological medicine, but he never allowed devotion to specialism to narrow his interests. While he was for many years lecturer on psychological medicine to St. George's Hospital Medical School, he served on the council of the Royal College of Physicians in 1887–8–9. In 1887 he attended the International Medical Congress at Washington, U.S.A., where he delivered the Address on Medicine on "The Treatment of Insane Patients." This address had been prepared for delivery to the Section on Mental Diseases, and he was altogether taken by surprise on finding that an address intended for an assembly of specialists was to be delivered before the Congress as a whole, but no one was more qualified than he to show how the developments and ramifications of a special subject must affect medicine generally. Dr. Blandford was a Fellow of the Royal Society of Medicine and had been vice-president of the Royal Medico-Chirurgical Society. He was also a past president of the Medico-Psychological Association of Great Britain and Ireland, and was president in 1894 of the Psychological Section of the British Medical Association, when he delivered an address on the "Prevention of Insanity." This address will be found in our columns and was recognised as an important pronouncement upon the development of neurotic affections attributable to the greater demands made by the requirements of modern life on the nervous system. The lecturer demonstrated that the exigencies of a complex civilisation, growing daily more complex, might result in the deterioration or exaggeration of certain faculties with a disturbance or complete overthrow of their proper balance, and urged that every effort should be made by attention to the important factor of heredity to prevent neuroses from becoming accentuated and intensified. Dr. Blandford stated that he had long been of opinion that insanity could be prevented chiefly by limiting the propagation of affected persons, and broadly gave it as his opinion that no man or woman should marry who has had an attack of insanity. From his personal observation he was inclined to adopt the view that the taint was transmitted through the female rather than through the male. He concluded his eloquent address by insisting upon the care that should be taken in the physical and mental nurture of children. At the time of his death he was president of the Society for the Relief of Widows and Orphans of Medical Men. In 1895 Dr. Blandford delivered the Lumleian lectures on "The Diagnosis, Prognosis, and Prophylaxis of Insanity" before the Royal College of Physicians of London. These lectures we published in full in THE LANCET. While the lecturer's discussion of insanity invaded the highest provinces of physiology, his remarks upon the tyranny of the examination system, which were received by his learned audience with uncompromising approbation, formed a most important part of the course. His words were not a sweeping indictment of modern educational methods in general, for he was mainly alluding to cases where there existed some predisposition to nervous breakdown. But he warned the College that while even the normal students are frequently overtried by the tests which the examination system may lay upon their intelligence, their temper, and their self-restraint, to those who are mentally unstable such tests are positively dangerous. The gist of his advice was that where deficiency or instability was noted by parents or by medical advisers the optimistic view that the child may grow out of "it" must not be too readily followed. The words in which he delivered his message are as weighty to-day as they were then.

Of his contributions to medical literature, his text-book on "Insanity and its Treatment" passed through four English editions, the first in 1871, the last in 1892. An American edition also was published in Philadelphia in 1871, and in Germany a German translation by Dr. H. Kornfeldt. The value of this text-book was recognised on its first appearance, the practical parts of the volume being in particular written in a manner which made them very useful to busy practitioners. Dr. Blandford supplied a series of clear sketches of the actual varieties of insanity met with in practice which were at once more accurate and more comprehensive than any which had previously appeared in English manuals; while with regard to treatment, especially in relation to the all-important matter of feeding, he afforded useful guidance. His directions for the medical man in regard to legal complications which must arise in lunacy practice were admirable, as were his directions of the process of examining suspected lunatics.

He was also the author of the article, "Insanity," in Quain's Dictionary of Medicine; of those on the "Prevention of Insanity" and the "Prognosis of Insanity" in Tuke's Dictionary of Psychological Medicine; and of that on "Insanity" in the "Twentieth Century Practice of Medicine." He contributed also various lectures and papers on kindred subjects to our columns, the *Medical Times and Gazette*, *St. George's Hospital Reports*, the *Journal of Mental Science*, and the *Fortnightly Review*. In all his writings the same blend of academic learning and practical good sense, to which we have alluded above, was apparent. He was at one time also a contributor to the *Cornhill Magazine*, but many years ago he ceased contributing to general literature, which was considered by many a pity, as his classical education gave a cultivated turn to his tastes, and he had considerable literary gifts. His chief relaxation was sketching, which he took up somewhat late in life. In books, pictures, prints, and other objects of art he found continual pleasure, and he had the collectors' spirit which, though never indulged by him to an inordinate extent, found an outlet at different periods in accumulating old books and bindings, "Cruikshankiana," prints, etchings, and in particular a considerable collection of books and views relating to old London. He parted with these, however, in the autumn of 1909, when he retired from practice and went to Tunbridge Wells to spend the remainder

of his days. Dr. Blandford had been a member of the Athenæum for very many years.

When young, Dr. Blandford was active and athletic, accustomed to riding from his earliest years, a good cricketer, playing in both his school and college elevens, a footballer, and an oarsman. He took also an early part in the Volunteer movement, belonging for several years to the 2nd (South) Middlesex Regiment. But with the increase of professional work active occupations were given up, and for many years before his death he had led a quiet and sedentary life, which was, in fact, more and more forced upon him by rheumatism. Except for this condition, which had troubled him for years, though without incapacitating him, Dr. Blandford enjoyed remarkably good health from childhood up to the time of his last illness, which began in June last with severe general rheumatism, rendering him quite helpless, and which was complicated later by broncho-pneumonia and cardiac failure. He slowly improved after the first severe attack, and the week before his death was able to leave his bed, but he was sorely tried by the hot weather, so that his strength gave out and further cardiac attacks took place. The end came suddenly and unexpectedly.

Dr. Blandford married in 1864 Louisa, only daughter of the late Rev. George Holloway, by whom he had two sons and two daughters. His widow and all his children survive him.

Dr. Thomas Buzzard writes: "An uninterrupted friendship of some 48 years has been broken by the death of Fielding Blandford, with whom I became acquainted when he was resident medical officer at Blacklands House, Chelsea, and later was for long years more intimately associated, especially when, after his marriage, he lived in Grosvenor-street, a few doors from my house. A wise physician, eminently qualified by his quiet composure of manner and excellent judgment, to give most reassuring counsel in the branch of the profession which he distinguished, Blandford possessed besides qualities which endeared him to a large circle of friends. Perhaps a distinguishing quality in his practice as an alienist physician was his practicality. He appeared to know intuitively what were the best steps to be taken in the management of difficult and troublesome cases. Fully alive to, and regardful of, the progress of scientific medicine, to which he made no mean contributions, he was no less interested in art and music and literature. He originated, when in Grosvenor-street, a Shakespeare reading club, which used to meet periodically—mostly at his house—and which was a source of great pleasure during many years to my own and other families. The Grosvenor Musical Society, too, a gathering of amateur musicians which met alternately at the members' houses, was another institution of interest in which he took delight, and in which he was intimately associated with many now deceased whose names will be long remembered—the late Dr. Anstie, Sir J. Burdon-Sanderson, Sir J. Russell Reynolds, Lord Herschell (then a young barrister), Dr. C Bland Radcliffe, and others. In art Blandford took great interest. He was an early admirer of Whistler's work, of which, long before that artist attained celebrity, he acquired many specimens in the form of etchings. His delight, too, was in water-colour paintings, and he never failed to bring back from his travels in holiday time many sketches by his own brush. Blandford was a man upon whose sound judgment one could always rely—a staunch friend, genial in his nature and eminently companionable, as free from 'fads' as he ever was from any excitement in manner, so that his memory will always be associated, I think, in the recollection of those who enjoyed his friendship, with the idea of one who was always welcome, was never tedious, and who somehow brought with him an atmosphere of good fellowship, hopefulness, and repose."

FRANK PIERCE FOSTER, M.D. NEW YORK.

Dr. Frank P. Foster, for 31 years editor of the *New York Medical Journal* and *doyen* of the medical journalistic profession in America, died at Chadwick, N.J., on August 13th. Having suffered for the last three years, especially during 1911, from cancer of the throat, death came as a relief. Dr. Foster was born in Concord, N.H., on Nov. 26th, 1841, of old New England stock, his mother being a niece of Daniel Webster, and received a thorough education at the public school of his native town. In the curriculum of the schools of New Hampshire at that time were included such studies as Latin and Greek; English was also taught thoroughly; and here Dr. Foster laid the foundation of his considerable philological knowledge. At the age of about 15 years he became a pupil of Dr. Lyman Gage, a physician of more than local celebrity, who introduced him to the study of botany, anatomy, and physiology. Thus prepared he entered the medical school of Harvard in 1857, taking his M.D. degree, however, in the College of Physicians and Surgeons, New York, in 1862. He then became an interne at the New York Hospital, where he remained for two years. He next joined as ship's surgeon a Pacific mail steamer, making a voyage through the Straits of Magellan to San Francisco. This left much time on his hands, of which he made good use by studying German, thus laying the foundation of that knowledge of the German language and literature which was subsequently so extended that in 1900 he was selected to edit, with Dr. E. Althaus, a revised edition of Adler's German and English Dictionary, which appeared in 1902. Returning *viâ* Panama in 1864, he became a contract surgeon in the United States Army, which position he held until the close of the Civil War, being for some time stationed in Baltimore. In 1865 he settled in New York, where he subsequently resided. At first he practised general medicine, but later took up as specialties dermatology, and afterwards obstetrics and gynæcology; an ingenious method of extracting the fœtus after transverse presentation now bears his name. In 1871 he introduced the manufacture of vaccine into America under the auspices of the New York Dispensary. Two years later, in 1873, he sojourned for half a year in London. Soon after his return to New York he was offered the chair of obstetrics at Yale University, which, however, he declined. During the "seventies" he held the position of librarian of the New York Hospital, a position eminently suited to his scholastic tastes.

On Jan. 1st, 1880, Dr. Foster assumed the editorship of the *New York Medical Journal*, founded in New York in 1865 by the late Surgeon-General William A. Hammond, United States Army. The *Journal* was then a monthly publication, as it had been since its foundation, and was so continued for three years, but in 1883 it became a weekly medical journal, which it has since continued to be. In July, 1900, the proprietorship of the *Journal* passed from D. Appleton and Company to the A. R. Elliott Publishing Company. In 1902 the *Journal* absorbed the *Philadelphia Medical Journal* and in 1906 the *Medical News*. In the early "eighties" Dr. Foster became editor of the well-known Encyclopædic Medical Dictionary which bears his name. It took 12 years to prepare and publish four massive volumes, and the work has been translated into seven languages. He was also the editor of a "Reference Handbook of Practical Therapeutics," in two volumes, and was on the editorial staff of the Standard Dictionary. Dr. Foster's knowledge of languages, both ancient and modern, was widely recognised during all these years. In the use of the English language he was conservative, preferring that our tongue should be left to the natural processes of evolution and not urged forcibly into novel paths by enthusiastic doctrinaires. When the American Medical Association decided upon a revision of the medical nomenclature Dr. Foster was chosen chairman of the commission and wrote the reports presented in 1909, 1910, and 1911. His editorial contributions to the *New York Medical Journal* were naturally very numerous, always excelling in their style and the correctness of their English; they referred to all branches of medicine as well as to other subjects of obvious interest to his readers. Under his wise and well-planned guidance the *Journal* acquired a leading place in American medical journalism.

Dr. Foster was also one of the 100 honorary members of the Medical Reserve Corps, United States Army, for his activities were varied and untiring. He was a strenuous supporter of the Academy of Medicine at the earliest times, when the meetings were held in the small chapel of the University of the City of New York, then situated in University-place, facing Washington-square. He also took an active part in the "code fight" in the Medical Society of the State of New York. He was a member of the Dermatological Society, which he helped to found, and of which, in later years, he became an honorary member.

Charitable in his judgment of others, willing to assist and help his friends, gladly giving from his great store of

knowledge, a master of the pen, he will be gratefully remembered by everyone who had the good fortune to become associated with him.

Mr. Kenneth W. Millican writes: "May I be permitted, as a former colleague of Dr. Foster on the *New York Medical Journal*, to add a few words of appreciation to the foregoing obituary notice? My acquaintance with Dr. Foster began at a meeting of the Mississippi Valley Medical Association at Louisville, Ky., in 1897, which resulted in his making me the offer early in 1898 to become associate editor with him of the *New York Medical Journal*, which was gladly accepted, the association continuing until 1904. I remember well the qualities as they emerged under my observation that made Dr. Foster such an admirable editor. I was first struck by his patience and gentleness when dealing with the results of inexperience in the work of the journal. He was never irritated at errors, nor did he content himself with merely pointing out the thing that was wrong and giving instruction for future guidance, but in the most patient manner he expounded the broad principles of journalism underlying the point in question. The next point was his devotion to accuracy, particularly in regard to references and to making detailed acknowledgment of anything taken from any other periodical or work. This, as he constantly insisted, was due, not only to oneself, lest one inadvertently made oneself responsible for the errors of others, and to the readers, that they might be able to fulfil the golden rule to 'verify references,' but even more to the author, who was entitled to the full credit for his work, and to the journal which was equally entitled to credit for giving it publicity. His carefulness in avoiding expressions in his own writings that might cause pain to others, and insisting on the elimination of such expressions from contributed matter, was, I am sure, widely appreciated throughout the medical profession of America. A 'pen dipped in gall' was to him an abomination. As time went on, one learnt further to appreciate his breadth of view, which led him on more than one occasion, in which subsequent events justified his judgment, to deprecate premature enthusiasm in the acceptance of novel discoveries or views, no matter how great the authority of those by whom they were sponsored. Still later one became impressed with his wide judgment of personalities in the medical profession, not only of America, but of Europe. He seemed to take a mental measure of the character and capacities of every medical man, writer or practitioner, who came into national or international prominence, and one which, so far as I was able to check it through personal acquaintance with the men in question, was nearly always correct. In like manner his estimate of the various medical periodicals, not only American but European, was keen and discriminating. I never knew him to resent honest criticism or to allow himself to be guided by bias or personal interest into unfair criticism of others. As to his scholarship, while it was undoubtedly wide, it was shown not so much in the detail he was able to carry in his memory as in his remarkable capacity for knowing instantly where to turn for such authentic information as existed on any conceivable subject, medical or otherwise, that might incidentally crop up. Dr. Foster was universally liked and respected, and he will be sincerely mourned throughout the medical profession of America."

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Otto Simon, chief surgeon of the Carlsruhe Hospital, from septic poisoning.—Dr. Albert Schinzinger, formerly extraordinary professor of surgery in Freiburg, aged 84 years. His published papers dealt chiefly with fractures and dislocations.—Dr. Paul Ziegler, *privat-docent* of surgery, in Munich.—Dr. E. Schwachten, of Berlin, chief railway surgeon of the Prussian and Hessian system.—Dr. A. Breglia, *privat-docent* of anatomy in the University of Naples.—Dr. W. Bailey, formerly professor of materia medica and therapeutics in the University of Louisville.—Dr. Henri Nicolas, formerly surgeon to the Marseilles Hospitals.—Dr. Mario Panizza, *privat-docent* of Medical Pathology in the University of Rome.—Dr. E. A. Lewis, formerly professor of anatomy in Long Island Medical College Hospital, Brooklyn.—Dr. Rava, professor of ophthalmology in the Sassari Medical School.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in August the following candidates passed in the subjects indicated:—

Surgery.—A. E. L. Devonald (Sections I. and II.), St. George's Hospital; E. M. E. Hall (Section II.), Royal Free Hospital; G. W. B. James (Sections I. and II.), St. Mary's Hospital; J. S. H. Lewis (Section II.), University College Hospital; G. S. Richardson (Section I.), Leeds; and R. M. Wingent (Section II.), Guy's Hospital.

Medicine.—E. E. Allen (Section I.), Royal Free Hospital; G. W. B. James (Sections I. and II.), St. Mary's Hospital; R. Lamort, Bordeaux; F. G. Norbury (Section II.), Glasgow; and W. H. Watson (Section II.), Guy's Hospital.

Forensic Medicine.—A. E. L. Devonald, St. George's Hospital; G. W. B. James, St. Mary's Hospital; J. S. H. Lewis, University College Hospital; P. J. Montgomery, Middlesex Hospital; and W. H. Vincent, St. Mary's Hospital.

Midwifery.—L. K. Edmeades, Guy's Hospital; A. Fordham, University College Hospital; G. W. B. James, St. Mary's Hospital; and C. W. Jenner, London Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—A. E. L. Devonald, E. M. E. Hall, G. W. B. James, J. S. H. Lewis, and W. H. Watson.

FOREIGN UNIVERSITY INTELLIGENCE.—*Amiens:* Dr. Braillon has been appointed Professor of Clinical Medicine in succession to Dr. Bernard. Dr. Courtellement has been appointed Professor of Medical Pathology.—*Amsterdam:* Dr. F. S. Meijers has been recognised as *privat-docent* of Forensic Psychiatry.—*Angers:* Dr. Jurlais has been appointed Professor of Physiology.—*Basle:* Dr. Rudolf Stähelin of Berlin has been appointed Professor of Clinical Medicine in succession to Dr. D. Gerhardt.—*Budapest:* Dr. Körösi has been recognised as *privat-docent* of the Physiological Effect of Foods.—*Buenos Aires:* Dr. Marcelo Viñas has been appointed to the chair of Clinical Surgery.—*Florence:* Dr. Carlo Comba of Bologna has been appointed to the chair of Pædiatry, in succession to Dr. G. Mya, deceased.—*Genoa:* Dr. Augusto Ducrey of Pisa has been appointed to the chair of Dermatology, in succession to the late Dr. G. Profeta. Dr. Giuseppe Lanza of Palermo has been recognised as *privat-docent* of Pædiatry.—*Göttingen:* Dr. Reichenbach of Bonn has been appointed Professor of Hygiene and Director of the Hygiene Institute in succession to Professor E. von Esmarch, who is retiring.—*Heidelberg:* Dr. W. Gross has been recognised as *privat-docent* of Pathological Anatomy.—*Iurieff (Dorpat):* Dr. Liutkevich has been appointed Professor of Ophthalmology.—*Königsberg:* Dr. Harry Scholtz has been recognised as *privat-docent* of Medicine and Dr. W. Telemann as *privat-docent* of Medicine.—*Lemberg:* Dr. Julius Marischler, *privat-docent* of Medicine, has been granted the title of Extraordinary Professor, and Dr. Victor Felix Reis has been recognised as *privat-docent* of Ophthalmology.—*Modena:* Dr. Giuseppe Zagari of Sassari has been appointed to the chair of Clinical Medicine.—*Naples:* Dr. Aurelio Giovine has been recognised as *privat-docent* of Medical Pathology.—*New York:* Dr. John J. McPhee has been appointed to the chair of Neurology in the Post-Graduate School and Hospital.—*Padua:* Dr. Antonio Berti has been recognised as *privat-docent* of Physiology.—*Pavia:* Dr. Enrico Rossi of Naples has been recognised as *privat-docent* of Psychiatry.—*Poitiers:* Dr. Morichau-Beauchant has been appointed Professor of Medical Pathology in succession to the late Dr. Brossard.—*Rheims:* Dr. Bagnéris, *agrégé*, has been appointed Professor of Physics in succession to Dr. Chevy.—*Rome:* Dr. Giuseppe Noccioli has been recognised as *privat-docent* of Midwifery and Gynæcology. *Siena:* Dr. Antonio D'Ormea has been recognised as *privat-docent* of Psychiatry.—*St. Petersburg:* Dr. Redlish has been appointed Professor of Midwifery and Gynæcology in the Military Medical Academy, in succession to Dr. Rein.—*Vienna:* Dr. E. Pribram has been recognised as *privat-docent* of General and Experimental Pathology.

THE ROYAL SANITARY INSTITUTE.—The fifty-second course of lectures and demonstrations for sanitary officers which are held under the auspices of the Royal Sanitary Institute will commence on Monday, Sept. 18th, and will close on Friday, Dec. 1st. The lectures are for the most part given on Mondays, Wednesdays, and Fridays, but

an occasional lecture will be delivered on a Tuesday or a Thursday. The course is divided into two parts. The first part will consist of six lectures dealing with elementary physics and chemistry in relation to water, soil, air, ventilation, and meteorology. The second part will deal with meat and food inspection, including the taking of samples of water, food, and drugs for analysis. Among the lecturers will be Mr. A. Wellesley Harris, medical officer of health of Lewisham; Dr. E. Petronell Manby, medical inspector to the Local Government Board; Dr. J. Priestley, medical officer of health of Lambeth; and Dr. E. J. Steegmann. The inspections and demonstrations will be held mostly on Tuesday, Wednesday, and Saturday afternoons in September, October, and November, and will include visits to sewage works, disinfecting stations, municipal lodging-houses, dairies, and so forth. The lecture hour is 7 P.M. and the fee for the complete course is £3 3*s*. For the first part a charge of £2 12*s*. 6*d*. is made and for the second part £1 1*s*. Commencing on Oct. 6th, at 7 P.M., a course of lectures to assist school teachers and other students entering for examinations in hygiene in its bearing on school life, and for women health visitors and school nurses, will be held at the Royal Sanitary Institute and Parkes Museum. The lecturers will include Dr. Marion Hunter-Vaughan, Professor H. R. Kenwood, Dr. A. B. Kingsford, Dr. Eric Pritchard, and Dr. C. J. Thomas. The course will consist of 19 lectures and demonstrations and the fee is £1 1*s*. A course of practical training for meat inspectors will commence on Oct. 13th at 7 P.M. Full particulars of all these lectures can be obtained from the secretary of the institute, 90, Buckingham Palace-road, London, S.W.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE: DEPARTMENT OF APPLIED STATISTICS.—Application for admission to this department should be addressed to Professor Karl Pearson, University College, Gower-street, London, W.C. Professor Pearson, F.R.S., and Dr. David Heron, M.A., D.Sc., will meet students on Monday, Oct. 2nd, between the hours of 10 A.M. and 1 P.M. and 4 P.M. to 6 P.M. Lectures are given by Professor Pearson and Dr. Heron and laboratory work may be carried on in the Galton laboratory for national eugenics and in the biometric laboratory, which are both open daily from 9.30 to 5.30. A course of public lectures will also be given in the second term, full particulars of which will be announced later. Dr. Heron's lectures are given on Wednesdays and practical classes on Mondays between the hours of 4 P.M. and 5 P.M. on both days (fee: session, £6 6*s*.; term, £2 12*s*. 6*d*.) and consist of an introductory course on Statistics for those intending to take up social, medical, or eugenic problems. Professor Pearson's lectures are given on Tuesdays and Thursdays at 4 P.M. (fee: session, £6 6*s*.; term, £2 12*s*. 6*d*.), and are upon the General Theory of Statistics. This course lasts through the session, and students attending it are supposed to have had a preliminary training in mathematics. The course will discuss the whole modern theory of statistics, and illustrate its application to biometric and eugenic problems. Except under special conditions, students should be attending at the same time one or other of the laboratories for practical work. They will be taught on actual data to make statistical measurements and to calculate the various types of statistical coefficients; they will be shown the use of tables, mechanical calculators, and integrating mechanisms. The practical work will be performed on two days a week (fee: session, £8 8*s*.; term, £2 12*s*. 6*d*.). A fee, however, of £12 12*s*. per session admits to the laboratories on all days and to all lectures, as well as to the use of the library and material in the archives. Also students who come to the laboratories sufficiently trained to carry on research work of their own are admitted to the laboratories at a charge of £3 3*s*. per term, and are assisted in their investigations with material, instruments, and advice. The Galton Eugenics Laboratory contains a growing library on topics connected with eugenics, including Sir Francis Galton's own books; stored material bearing on social, physical, and hereditary conditions, including Sir Francis Galton's own anthropometric data; a collection of anthropometric and other instruments, chiefly from the Galton bequest; and an interesting historical collection of Galton portraits and other Galtoniana. There is a fine bronze bust of Sir Francis Galton by Sir George Frampton, R.A. The assistants in this laboratory are: David Heron, M.A., D.Sc., Galton research fellow; Ethel M. Elderton, Galton research scholar; Amy Barrington, computer; and Kathleen V. Ryley, assistant in pedigree-drafting. The biometric laboratory, which is assisted by a grant from the Worshipful Company of Drapers, possesses a good collection of calculating machines, integrating mechanisms, moment-finders, as well as a large series of statistical models, diagrams, and other apparatus; craniometric, anthropometric, and measuring instruments; microscopes, cameras, &c.; and a large collection of biometric and statistical memoirs. The assistants in this laboratory are: Julia Bell, M.A., Herbert G. Soper, M.A., Eveline Y. Thomson; and honorary assistant, P. F. Everitt, B.Sc., Benington student (in craniometry and anthropometry). The honorary secretary is H. Gertrude Jones.

Parliamentary Intelligence.[1]

HOUSE OF COMMONS.

WEDNESDAY, AUGUST 16TH.

Schools and Epidemics.

Mr. R. GWYNNE asked the President of the Board of Education whether his attention had been called to the spread of infectious disease, resulting in some cases in numerous deaths, consequent upon the delay in closing schools after an outbreak of disease; and whether he would consider the advisability of reverting to the former system, under which local managers were empowered to close the school upon the advice of a qualified medical practitioner.—Mr. RUNCIMAN said in reply: No such case has been brought to my notice. I shall be glad to make inquiries about any case to which the honourable Member will refer me. The answer to the last part of the question is in the negative.

Phthisis in the West of Scotland.

Mr. MACPHERSON asked the Lord Advocate whether Dr. Dittmar, Dr. Dewar, and Dr. McVail, medical inspectors of the Local Government Board, had now completed their investigations into the extent to which phthisis existed among the industrial communities in the West of Scotland; and, if so, when that report would be presented to Parliament.—Mr. URE answered: I understand that reports have been received in regard to certain localities and are now under consideration. It would be premature to make any announcement as to publication.

Post Office Medical Officers.

Sir DAVID BRYNMOR-JONES asked the President of the Board of Education whether it was the usual practice of the Board of Education to nominate for the purpose of the Elementary School Teachers (Superannuation) Act, 1898, and rules, the medical officers employed by the Post Office; and, if so, on what ground was this practice adopted.—Mr. RUNCIMAN wrote in reply: Yes; the medical officers employed by the Post Office are selected with a view to work of a character similar to that which is required of doctors nominated for the purpose of the Elementary School Teachers (Superannuation) Act, 1898. They are also conveniently distributed over the country. For these reasons it has been the usual practice of the Board, with the concurrence of the Post Office, to nominate them for the duties in question.

THURSDAY, AUGUST 17TH.

Alleged Cure for Consumption.

Mr. CHARLES BATHURST asked the President of the Local Government Board whether Dr. Kaye, medical officer of health to the West Riding county council, was requested by him to visit a maggot farm and inquire there into the alleged cure for consumption resulting from the inhalation of the substances from maggots found in putrefying meat; and, if so, what was the result of such inquiry.—Mr. BURNS replied: I have made no such request to Dr. Kaye.

Mr. BATHURST: Is the right honourable gentleman aware that it has been repeatedly stated at meetings of local authorities that he made that request?—Mr. BURNS: Yes, and I have just as repeatedly contradicted it.

Ambulance Arrangements at the Coronation.

Colonel YATE asked the Secretary of State for the Home Department whether, in view of the fact that the ambulance arrangements at the Coronation were made by the police, he would state how many members of voluntary aid detachments of the Red Cross Society did duty at the Coronation and how many members of the St. John Ambulance Brigade.—Mr. CHURCHILL replied: 2142 members of the St. John Ambulance Brigade did duty on June 22nd. The Red Cross Society offered its services, but the offer was subsequently withdrawn, as it was found impossible to ensure the attendance of a sufficient number of detachments with the requisite uniform. In consequence no members of the voluntary aid detachments of the Red Cross Society did duty.

Preserved Milk.

Mr. MOUNT asked the President of the Local Government Board whether his attention had been called to the fact that 19,000 cases of preserved mik arrived in the Port of London on Tuesday and Wednesday last; whether such milk was produced under restrictions and conditions similar to those imposed upon dairy farmers in England; and whether any tests had been made recently as to the amount of butter-fat contained in such milk, and, if so, with what result.—Mr. BURNS wrote in reply: I understand that 9000 cases of preserved milk arrived in the Port of London on Tuesday and Wednesday of last week. Examinations made during the six months ending June 30th showed that the samples tested of condensed milk made from whole milk contained an average

[1] These notes were omitted from THE LANCET last week, the issue of August 26th being the Students' Number.

of 9·76 per cent. of fat, and had been prepared from milk containing at least 3 per cent. of butter-fat. The samples of whole-milk powders contained on the average 30·1 per cent. of fat, and had been made from milk containing over 3 per cent. of butter-fat. There is no evidence to show that the sources of these imported supplies are less satisfactory from a sanitary point of view than those of home-produced milk.

FRIDAY, AUGUST 18TH.

The Nutritive Value of Bread.

Mr. CHARLES BATHURST asked the President of the Local Government Board whether, in view of the opinion expressed by Dr. J. M. Hamill in his recently published report to the Board on the nutritive value of different varieties of bread to the effect that, in the case of poor persons whose food consisted principally of bread, it was important to recognise the fact that a loaf made from households or stone-ground or standard flour possessed more available nutrient material and energy value than one made from pure white flour, he proposed to take any and, if any, what steps to bring this fact to the notice of working men and their wives throughout the country.—Mr. BURNS answered: Copies of Dr. Hamill's report have been sent to the press and will also no doubt be shortly in the hands of medical officers. I have no reason to suppose that sufficient publicity will not be secured by these means for the conclusions arrived at.

BOOKS, ETC., RECEIVED.

ADLARD AND SON, London.

National Association for the Prevention of Consumption and Other Forms of Tuberculosis. Transactions of the Annual Conference at Caxton Hall, Westminster, July 19th to 21st, 1911. Price 2*s.* 6*d.* net.

CHURCHILL, J. AND A., London.

The Practice of Medicine. By Frederick Taylor, M.D., F.R.C.P. Ninth edition. Price 18*s.* net.

CURRIE, JOHN, 16, Teviot-place, Edinburgh.

Queer Patients. By M. Oston, M.D. Price 3*s.* 6*d.* net.

FISCHER, GUSTAV, Jena.

Die akuten Vergiftungen. Ein Vademecum für die ärztliche Praxis. Von Friederich Kanngiesser, Dr. med. et phil., Toxikologe an der Universität Neuchâtel. Price M.1.

Handbuch der pathogenen Mikroorganismen. Herausgegeben von Dr. W. Kolle, Universität Bern, und Dr. A. von Wassermann, Universität Berlin. Zweite vermehrte Auflage. Erste (Probe-) Lieferung. Price M.2.50. Zweite Lieferung (Bd. I., Bogen 6–15). Price M.5.

Lehrbuch der Therapie innerer Krankheiten. Für Aerzte und Studierende. In zwei Bänden. I. Band. Allgemeine Therapie innerer Krankheiten. Herausgegeben von Dr. Paul Krause und Dr. Carl Garrè. Price M.11.50; bound, M.12.50.

Die Anwendung des Salvarsan (Dioxydiamidoarsenobenzol) in der ärztlichen Praxis. Eine Studie aus der Praxis für die Praxis. Von Sanitätsrat Dr. Richard Lenzmann, Prakt. Arzt und Oberarzt am Diakonenkrankenhause zu Duisburg. Price M.4.

Sammlung anatomischer und physiologischer Vorträge und Aufsätze. Herausgegeben von Prof. Dr. E. Gaupp und Prof. Dr. W. Trendelenburg. Heft 15. (Zweiter Band, Heft 2.) Blutkörperchen und Wanderzellen. Von Prof. Dr. Franz Weidenreich in Strassburg. Price M.1.60.

Die Bedeutung der Magenradiologie für die Chirurgie. Von Privatdozent Dr. Paul Clairmont, Assistenten der I. Chirurgischen Klinik, und Dr. Martin Haudek, Assistenten des Röntgenlaboratoriums. Price M.2.80.

Handbuch der Gesamten Therapie. In sieben Bänden. Herausgegeben von Dr. F. Penzoldt und Dr. R. Stintzing. Vierte umgearbeitete Auflage. Einundzwanzigste Lieferung. Price M.4.50.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

The Goulstonian Lectures on the Sensibility of the Alimentary Canal. Delivered at the Royal College of Physicians on March 14th, 16th, and 21st, 1911. By Arthur F. Hertz, M.A., M.D. Oxon., F.R.C.P. Price 5*s.* net.

HILL, WALTER, London.

The Holidays: Where to Stay and What to See. Price 1*s.*, or post free 1*s.* 6*d.*

HIRSCHWALD, AUGUST, Berlin.

Grundriss der Zoologie und vergleichenden Anatomie für Studierende der Medizin und Veterinärmedizin. (Zugleich Repetitorium für Studierende der Naturwissenschaften.) Von Alexander Brandt, Dr. der Medizin, Dr. der Zoologie, o. Professor der Universität Charkow. Price M.14.

IMPRENTA Y PAPELERÍA LA UNIVERSAL DE RUIZ Y CA, Habana.

Actas y Trabajos del Segundo Congreso Médico Nacional, Habana, Febrero 24–28 de 1911. Price not stated.

KEENER, GEORGE, AND CO., 16A, Red Lion-square, London.

Medical Guide and Monograph Series. Pediatrics. Aphorisms, Observations, and Precepts on the Science and Art of Pediatrics. By John Zahorsky, A.B., M.D., Clinical Professor of Pediatrics, Medical Department, Washington University, St. Louis. With an Introduction by E. W. Saunders, M.D., Emeritus Professor of Diseases of Children and Clinical Midwifery, Medical Department, Washington University, St. Louis. Price 10*s.* 6*d.* net.

KING, P. S., AND SON, Orchard House, Westminster, London, S.W.

Camping for Boys. By J. H. Whitehouse, M.P., Honorary Warden of the Secondary Schoolboys' Camp. Price 1*s.* net.

The National Association for Women's Lodging-Homes. Report of the Proceedings of the National Conference on Lodging-House Accommodation for Women, held in Guildhall, London, on Wednesday, 17th May, 1911, under the Presidency of the Right Honourable the Lord Mayor and Her Grace the Duchess of Marlborough. Price 6*d.* net; post free 7*d.*

LEONARD, W. M., 101, Tremont-street, Boston, U.S.A.

One Hundred Surgical Problems. The Experiences of Daily Practice Dissected and Explained. By James G. Mumford, M.D., Visiting Surgeon to the Massachusetts General Hospital; Instructor in Surgery, Harvard Medical School. Price $3.

LIBRAIRIE DIEMER; FINCK ET BAYLÆNDER, Successeurs, Rue Kamel, Cairo.

Mémoires présentés à l'Institut Egyptien et publiés sous les Auspices de S. A. Abbas II., Khédive d'Égypte. Tome VI.-Fascicule III. Histological Studies on Egyptian Mummies. By Marc Armand Ruffer. Price not stated.

LIPPINCOTT (J. B.) COMPANY, Philadelphia and London.

Essentials of Medicine. A Text-book of Medicine for Students beginning a Medical Course, for Nurses, and for all others interested in the Care of the Sick. By Charles Phillips Emerson, M.D., late Resident Physician, the Johns Hopkins Hospital. Second edition, revised. Price 8*s.* 6*d.* net.

International Clinics. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, U.S.A., with Collaboration. Twenty-first Series, 1911. Volumes I. and II. Price 35*s.* net per annum (4 volumes).

MACDOUGALL, ALEXANDER, 70, Mitchell-street, Glasgow.

Transactions of the Glasgow Obstetrical and Gynæcological Society. Volume VII. Sessions 1908–1909, 1909–1910. Price not stated.

MASSON ET CIE, Paris.

Supplément aux Annales des Maladies des Organes Génito-Urinaires, 1882–1911. Recueil de Mémoires d'Urologie Médicale et Chirurgicale. Préface de M. F. Guyon. Publiés par MM. F. Widal, Pousson, Legueu, Carlier, Rafin, Bazy, Marion, Desnos, Michon, J. Janet, Jeanbrau, Heitz-Boyer. Juillet, 1911. Price not stated.

METHUEN AND CO., LIMITED, London.

The Real Cause of Stammering and its Permanent Cure. A Treatise on Psycho-Analytical Lines. By Alfred Appelt, Principal of the Institute for Stammerers, Goldington, Bedford. Price 3*s.* 6*d.* net.

MITTLER, ERNST SIEGFRIED UND SOHN, Kochstrasse, 68–71, Berlin, S.W. 68.

Medizinal-Berichte über die Deutschen Schutzgebiete, Deutsch-Ostafrika, Kamerun, Togo, Deutsch-Südwestafrika, Neu-Guinea, Karolinen, Marshall-Inseln, Marianen und Samoa, für das Jahr 1909–10. Herausgegeben vom Reichs-Kolonialamt. Price, paper, M.10; bound, M.11.

MÜLLER UND STEINICKE, RUDOLPH, München.

Die Ursachen der Glykurie. Ihre Verhütung und Behandlung. Von Dr. Franz Rosenberger, München. Price M.7.60.

PANDIT KRIPARAM SARMA, 8, Nandi Bagan Lane, Salkea, Howrah, India.

Leprosy and its Treatment. By Pandit Kripárám Sarmá. Third edition. Price not stated.

PULMAN, GEORGE, AND SONS, LIMITED, Thayer-street, Manchester-square, London, W.

Instructions in the Use of the Catheter, especially written for Male Nurses. By a Surgeon. Price 1*s.*

RAGGED SCHOOL UNION AND SHAFTESBURY SOCIETY, 32, John-street, Theobald's-road, London, W.C.

A Gate Beautiful: The Story of the Ragged School Union and Shaftesbury Society. 1910–1911. Price 6*d.*

REBMAN, LIMITED, London.

Principles of Anatomy. The Abdomen Proper. Described and Illustrated by Texts and Plates. Accompanied by 14 Plates, each 14½ in. by 10 in., with special frame for same.) Price 42*s.* net, complete.

Refraction and Visual Acuity. By Kenneth Scott, M.D., C.M., F.R.C.S. Edin. Price 6*s.* net.

RICHARDS, GRANT, LIMITED, 7, Carlton-street, London.

The Birds of the British Islands. By Charles Stonham, C.M.G., F.R.C.S., F.Z.S. With Illustrations by Lilian M. Medland, F.Z.S. In Twenty Parts. Parts XIX. and XX. July, 1911. Price 7*s.* 6*d.* net each part.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Spirochætes. A Review of Recent Work with Some Original Observations. By W. Cecil Bosanquet, M.A., M.D., F.R.C.P. Lond., Formerly Fellow of New College, Oxford. Price 12*s.* net.

SELL, CHARLES H., 168, Fleet-street, London, E.C.

Low's Handbook to the Charities of London. 1911. (76th Year of Publication.) Price 1*s.*

SIMPKIN, MARSHALL, AND CO., London. MENZIES, JOHN, AND CO., Edinburgh. MURRAY, ALEXANDER, Aberdeen.

The Complete Text-book of Physical Exercises. With 204 Illustrations, and Music. Specially adapted for the Use of Public Elementary Schools. By Isabel Murray, Certificated Physical Instructor and Lecturer and Demonstrator on the Effects of Physical Training on Health in Aberdeen, Edinburgh, and Glasgow. Price 3*s.* 6*d.* net.

SMITH, ELDER, AND CO., 15, Waterloo-place, London.

The Grouse in Health and in Disease. Being the Final Report of the Committee of Inquiry on Grouse Disease. In two Volumes. Price not stated.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, London, W.

Year Book of the Society of Tropical Medicine and Hygiene. Session 1911–1912. Price not stated.

TÖPELMANN, ALFRED (VORMALS J. RICKER), VERLAG VON, Giessen.
Zur Historischen Biologie der Krankheitserreger; Materialien, Studien und Abhandlungen. Gemeinsam mit V. Fossel, Graz; T. v. Györy, Budapest; W. His, Berlin. Herausgegeben von Karl Sudhoff, Leipzig, und Georg Sticker, Bonn. 3 Heft. Grafton Elliot Smith und Marc Armand Ruffer: Pott'sche Krankheit an einer Aegyptischer Mumie aus der Zeit der 21. Dynastie (um 1000 v. Chr.). Mit zwei Tafeln. Vorausgeschickt ist eine Skizze von Karl Sudhoff: Zur Einführung und Orientierung. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BRIERCLIFFE, R., M.B., Ch.B. Vict., has been appointed House Physician at the Manchester Royal Infirmary.

BUCKLEY, J. P., F.R.C.S. Eng., has been appointed Assistant Surgical Officer to the Manchester Royal Infirmary.

BURGESS, ROBERT, B.C., M.B. Cantab., L.R.C.P. Lond., M.R.C.S., has been appointed Public Vaccinator for Tiverton (Devon) by the Tiverton Board of Guardians.

CARRUTHERS, WALTER D., M.B., Ch.B. Birm., has been appointed Medical Officer of Health of the Whittington and Newbold Urban District, Derbyshire.

COCKER, J. F., M.B., Ch.B. Vict., has been appointed a Senior House Surgeon at the Manchester Royal Infirmary.

COOK, ALEXANDER, M.D. Glasg., has been appointed Medical Officer of Heath for the Annfield Plain Urban District, Durham.

CORMAC, H. DOVE, M.B., M.S. Madras, has been appointed Senior Assistant Medical Officer at the Cheshire County Asylum, Parkside, Macclesfield.

DUPRÉ, W. H., has been appointed House Surgeon at the Kent and Canterbury Hospital.

FAGAN, JOSEPH P., L.K.Q.C.P., L.R.C.S. Irel. (Deputy Principal Medical Officer), has been appointed Principal Medical Officer of Northern Nigeria.

GOW, J., M.B., Ch.B. Vict., has been appointed a Senior House Surgeon at the Manchester Royal Infirmary.

GREY, E., M.B., Ch.B. Vict., has been appointed a Junior House Surgeon at the Manchester Royal Infirmary.

HOLMES, A. H., M.B., Ch.B. Vict., has been appointed House Physician at the Manchester Royal Infirmary.

HOSEGOOD, SAMUEL, M.R.C.S., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Swinton District of the county of Lancaster.

HUNTER, C. STEWART, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health of the Borough of Carnoustie.

HUTCHINSON, R. C., M.B., Ch.B. Vict., has been appointed Medical Officer at the Central Branch of the Manchester Royal Infirmary.

LEVY, A., M.D., C.M. McGill Univ., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Central London Ophthalmic Hospital.

MANNING, HERBERT CAMPBELL, L.R.C.P. Lond., M.R.C.S., has been appointed Assistant Medical Officer of Health of the County of Dorset.

MAY, Miss M., M.B., Ch.B. Vict., has been appointed Clinical Assistant at the Manchester Royal Infirmary.

MORITZ, M., M.B., Ch.B. Vict., has been appointed a Junior House Surgeon at the Manchester Royal Infirmary.

NEW, J. SHERWOOD, M.B., B.S. Lond., has been appointed Assistant Lecturer in the Department of Hygiene and Public Health at University College, London.

PARKIN, GEORGE G., M.B., Ch.B. Vict., has been appointed Second Assistant Medical Officer at the Cheshire County Asylum, Parkside, Macclesfield.

PETRIE, GAVIN E., M.B., Ch.B. Aberd., has been appointed Third Assistant Medical Officer at the Cheshire County Asylum, Parkside, Macclesfield.

ROBINSON, JOHN E., M.B., B.S. Lond., has been appointed Medical Officer of Health of the County of Dorset.

SAWDON, G. E., M.B., Ch.B. Vict., has been appointed House Physician at the Manchester Royal Infirmary.

SNEATH, W. A., M.B., Ch.B. Vict., has been appointed a Junior House Surgeon at the Manchester Royal Infirmary.

STEWART, GEORGE IRVINE THOMPSON, M.B., C.M., D.P.H. Aberd., F.R.C.S. Eng., has been appointed Medical Officer of Health for the County of East Suffolk.

STIRLING, WILLIAM, Jun., M.B., Ch.B. Vict., has been appointed Assistant Medical Officer at the Barnes Convalescent Hospital of the Manchester Royal Infirmary.

STUART, FRANCIS W., M.B., Ch.B. Aberd., has been appointed Senior House Surgeon at the Coventry and Warwickshire Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ASHTON-UNDER-LYNE, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board, residence, and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Junior House Surgeon. Salary £70 per annum, with board and residence.

BIRMINGHAM, QUEEN'S HOSPITAL.—One House Physician and One Obstetric and Ophthalmic House Surgeon, for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

BRADFORD ROYAL INFIRMARY.—Two House Surgeons; also House Physician; all unmarried. Salary in each case £100 per annum, with board, residence, and washing.

BRECKNOCK COUNTY AND BOROUGH INFIRMARY.—Resident House Surgeon, unmarried. Salary £120 per annum, with apartments, board, attendance, &c.

BRISTOL GENERAL HOSPITAL.—House Physician for six months. Salary £80, with board, residence, &c.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Surgeon for six months. Salary £70 per annum, with apartments, board, and laundry.

CARLISLE DISPENSARY.—Resident Medical Officer. Salary £150, with apartments.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant for three months.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon. Salary £80 per annum, with board, washing, and residence.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with rooms, board, washing, and attendance.

CROSSLEY SANATORIUM, Delamere Forest, Cheshire.—Assistant Medical Officer. Salary £100 per annum, with board, apartments, and laundry.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £125 per annum. Also Assistant House Surgeon, unmarried, for six months. Salary at rate of £75 per annum. With board, apartments, laundry, &c., in each case.

DUBLIN, ROYAL VICTORIA EYE AND EAR HOSPITAL, Adelaide-road.—House Surgeon. Salary £40 per annum, with full board and residence.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £75 per annum, with residence, board, and washing.

FLINTSHIRE EDUCATION COMMITTEE.—Assistant to County Medical Officer of Health and School Medical Officer. Salary £250 per annum.

GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—Resident Medical Officer. Salary £120 per annum, with board, lodging, and laundry. Also Two House Physicians, one for six months, the other for eight months; and Two House Surgeons, one for four months, the other for six months. Salary in each case at rate of £40 per annum, with board, lodging, and laundry.

GREENWICH UNION INFIRMARY AND WORKHOUSE.—Junior Assistant Medical Officer. Salary £100 per annum, with apartments, rations, and washing.

HASTINGS, EAST SUSSEX HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with residence, board, and washing. Also Assistant House Surgeon. Salary at rate of £50 per annum, with rooms, board, and washing.

HEMEL HEMPSTEAD, HERTS, WEST HERTS HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with rooms, board, and washing.

LEEDS GENERAL INFIRMARY.—House Physician for six months. Board, residence, and washing provided.

LEICESTER INFIRMARY.—House Physician. Salary at rate of £100 per annum, with board, lodging, and washing.

LINCOLN COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Salary at rate of £75 per annum, with board, residence, and washing.

LIVERPOOL INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Three House Surgeons and Two House Physicians for six months. Salary at rate of £60 per annum, with board and residence.

LIVERPOOL, UNIVERSITY OF.—Chair of Pathology. Salary not less than £600 per annum.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board and residence.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Visiting Surgeon. Salary £100 per annum. Also Resident Medical Officer for six months. Salary £40.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing.

MANCHESTER WORKHOUSE INFIRMARY, Crumpsall.—Visiting Surgeon. Salary £150 per annum.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Assistant House Surgeon for six months. Salary £75 per annum, with residence, board, and washing.

MULLINGAR DISTRICT LUNATIC ASYLUM.—Resident Assistant Medical Officer, unmarried. Salary £112 10s. per annum.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Honorary Assistant Surgeon.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, with apartments, attendance, &c.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Salary £100 per annum, with board, lodging, and washing.

PETERBOROUGH INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, and laundry.

PORTSMOUTH, ROYAL PORTSMOUTH HOSPITAL.—House Physician for six months. Salary £75 per annum, with board, &c.

POSTAL SERVICE.—Medical Officer for the Shepherd's Bush Postal Sub-District, Loftus-road, Shepherd's Bush. Salary £35 per annum. Also Medical Officer for the West Kensington Postal Sub-District Blythe-road, West Kensington. Salary £68 per annum.

PRESTON ROYAL INFIRMARY.—Senior House Surgeon, unmarried, for six months. Salary £80 per annum, with board, residence, and washing.

ROCHDALE INFIRMARY.—Senior House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House

Physician for six months. Salary at rate of £60 per annum, with board, lodging, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board and residence.

SALFORD ROYAL HOSPITAL.—Junior House Surgeon and Casualty House Surgeon, each for six months. Salaries at rate of £50 per annum, with board and residence.

ST. PANCRAS (SOUTH) INFIRMARY AND WORKHOUSE.—Senior Assistant Medical Superintendent and Senior Assistant Medical Officer. Salary at rate of £150 per annum with residential allowances.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £100 per annum, with rooms, board, and washing.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon, unmarried, for six months. Salary £70 per annum, with residence, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £90 per annum, with residence, board, and washing.

STAFFORD, STAFFORDSHIRE COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Surgeon. Salary £100 per annum, with apartments, board, and washing.

SUNDERLAND ROYAL INFIRMARY.—House Physician for six months. Salary £80 per annum, with board, residence, and laundry.

TAUNTON AND SOMERSET HOSPITAL.—Resident Assistant House Surgeon for six months. Salary at rate of £70 per annum, with board, lodging, and laundry.

TEIGNMOUTH HOSPITAL, S. Devon.—House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

WALSALL AND DISTRICT HOSPITAL.—House Physician and Casualty Officer. Salary £80 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary at rate of £100 per annum, with board, lodging, and laundry.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Junior House Physician. Salary £75 per annum.

WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, N.E.—Fourth Assistant Resident Medical Officer. Salary £120 per annum.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and laundry provided.

WINDSOR, KING EDWARD VII. HOSPITAL.—House Surgeon, unmarried. Salary £130 per annum, with residence, board, laundry, and attendance.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary £80 per annum, with board, rooms, and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Act at Biggleswade, in the county of Bedfordshire; and at Overton, in the county of Flintshire.

Births, Marriages, and Deaths.

BIRTHS.

BADCOCK.—On August 25th, at Croxted-road, Dulwich, S.E., the wife of C. Halford Badcock, M.R.C.S., of a daughter.

WALDO.—On August 24th, at Lansdowne-road, Holland Park, W., the wife of Frederick Joseph Waldo, M.D., Barrister-at-Law, of a daughter.

WATSON.—On August 30th, at 2, Ripon-road, Harrogate, the wife of William Bertram Watson, M.D., of a daughter.

MARRIAGES.

BROWN—POTTER.—On August 26th, at St. Mary's Church, Shortlands, Captain Henry Coddington Brown, I.M.S., 47th Sikhs, to Gladys Mary, daughter of the late W. Furniss Potter.

GLANVILLE—HOME.—On August 23rd, at the Parish Church, Emsworth, Hants, Llewellyn Stanley Howard Glanville, M.D., to Dorothy Helena, daughter of the late Charles G. Home.

HIGSON—TYLER.—On August 24th, at St. Mary's, Prittlewell, William Davies Higson, M.B., D.P.H., to Mildred Barlow, daughter of John Stephen Tyler.

DEATHS.

BROWNE-WEBBER.—On June 20th, at Managua, Nicaragua, Central America, Francis C. Browne-Webber, M.D., aged 56 years.

DAVISON.—At West House, Hunstanton, suddenly, on Sunday, August 27th, Herbert Davison, Physician and Surgeon, late of Gosberton, Lincs.

INCE.—On August 23rd, at Montague House, Swanley, Kent, Surgeon-Major John Ince, M.D., I.M.S., aged 81 years.

MANTELL.—On August 22nd, at The Elms, Bathampton, Bath, Dr. A. A. Mantell, formerly Surgeon-Major in the Indian Army, aged 80 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HEALTH AND SANITATION IN ASHANTI.

ACCORDING to the report for 1910 prepared by the Acting Chief Commissioner (Mr. A. J. Philbrick) the average daily number of Europeans resident in Ashanti during the year was 258 (officials 57, missionaries 5, other non-officials 193, women 3). One official and four non-officials died, or 1·86 per cent. There are European hospitals at Coomassie (the largest town, which has a population of about 19,000) and Obuasi, and native hospitals at Coomassie, Obuasi, Sunyani, and Kintampo, while at the latter place a fly-proof building has been erected for dealing with cases of sleeping sickness. There were between 80 and 90 known cases of sleeping sickness during the year. This disease is principally prevalent in the Western Province and round Krachi. Fifteen cases were treated with atoxyl injections at Coomassie. A small special isolation hospital for the treatment of this disease is being built. Dr. Kinghorn completed his tour, and has contributed a valuable and lengthy report on this subject, which will be published. He states: "Over the whole of the Western Province sleeping sickness and tsetse flies, more particularly Glossina palpalis, are common, and both are most frequent in the semi-forest country comprising the Gaman, Berekum, and Wenchi districts. The disease appears to exist in a chronic endemic form, except possibly in the area mentioned above, though it is impossible to say it is here becoming 'epidemic.'" Mr. G. J. W. Keigwin was also stationed at Krachi on special duty connected with sleeping sickness. Small-pox was prevalent throughout Ashanti, outbreaks being reported from all parts. The provincial medical officer attributes a good deal of it to the old-established Ashanti custom of inoculating healthy persons direct from those suffering from the disease. A large amount of lymph vaccination was successfully performed (2881 vaccinations in Coomassie alone), and the outbreak is being well kept under. Medical officers were stationed at Coomassie, Obuasi, Sunyani, Kintampo, and Krachi, and a nursing sister was in charge of the Coomassie Hospital throughout the year. The report gives details of the measures being taken to improve sanitation, and the Commissioner states that during his recent tours he found a most gratifying desire on the part of the native chiefs to have their villages better laid out. The supply of clean drinking water still presents a serious difficulty. The vast majority of villages depend for their supply on running streams, which often diminish to stagnant pools for weeks together in the dry season. This water is used for all purposes, personal ablutions and the washing of clothes invariably taking place in the stream itself. In some cases the Commissioner found the water supplied for his use to be so defiled as to be useless, even after boiling and filtration. Steps are being taken to remedy this state of things.

A HOLIDAY GUIDE-BOOK.

A VERY useful guide for holiday seekers is "The Holidays: Where to Stay and What to See," published by Walter Hill, 66, Southampton-row, London, price 1s., post free 1s. 6d. It contains in one volume the guides to hotels, boarding-houses, and apartments of the Midland, London and North-Western, Great Northern, Great Eastern, Great Western, and Great Central Railways. These guides contain a brief account of the principal holiday resorts on the respective routes, with numerous photographs, an alphabetical list of towns with the names, description, accommodation, terms, and so forth, of the various hotels, boarding-houses, and apartment houses. Southern Ireland, the Isle of Man, the Channel Islands, and Brittany are included. There are many railway maps, lists of golf links, and much other interesting information.

EXHIBITION OF A BABY IN AN INCUBATOR.

AT a recent inquest in the Hackney Coroner's Court upon a girl child, 7 months of age, who had died from exhaustion following diarrhœa, it was elicited that a few days after the child was born, when she was recognised as being delicate and unlikely to live, the mother had been induced to allow her to be exhibited in an incubator at the "World's Fair" at Islington. The mother stated that the infant was at the "World's Fair" for a fortnight, and that the care she there received seemed to have done her good, but that after being returned to her parent she soon became as sickly as before. From the fact that the death of the child was followed by an inquest the inference may be drawn that having received her back from the exhibitors the mother did not consider it worth while to obtain medical advice with regard to her. Otherwise a certificate of the cause of death would have been forthcoming. Here it may be observed that the mother stated at the inquest that she was paid 10s. a week for lending a suitable baby for exhibition, and the question may well be asked whether such exhibitions should be permitted. Ethically, the exhibition itself, if held purely for gain and for no other purpose, must be held to be indecent and undesirable

for many reasons. It could, however, hardly be interfered with legally on any ground of cruelty to a child, which might be regarded as temporarily in better surroundings than those of its home. The element of pecuniary profit to the mother seems the worst feature of the case, as it excludes the suggestion that benefit to the child was the sole object of the arrangement made.

FACTORY GIRLS' COUNTRY HOLIDAY FUND.

To the Editor of THE LANCET.

SIR,—The exceptional and long-continued hot weather is specially trying to those who have to work in large cities. The fortunate minority of Londoners who are able to get away for a real holiday—say, a whole month—will surely wish that a large proportion of their hard-worked fellow-citizens should have at least a week. Few Londoners work so hard as the women and girls, some of them mere children, employed in factories. Their average working day is nine to ten hours. The Factory Girls' Country Holiday Fund provides for these workers one precious week or fortnight of fresh air. The girls themselves begin months beforehand saving a few pence each week towards their holiday, but they cannot possibly pay the whole cost out of wages varying from 3*s.* to 14*s.* a week. We have already sent away over 4000, and hundreds more are waiting to go, but our funds are now exhausted and contributions are most urgently needed.

May we conclude by quoting from a letter received from one of these working girls:—"My friend Lizzie would like to go also as she has never been away, and the change would do her good, because she is subject to faints, and she works in a room with fifteen gas rings alight, which makes it very hot, so a change of air would be very welcome." Subscriptions and donations will be thankfully received by the chairman of the executive committee, the Rev. E. Canney, St. Peter's Rectory, Saffron-hill, London, E.C., or by the honorary secretary, Miss Paget, 28, Campden Hill-square, W.

We are, Sir, yours faithfully,

BEATRICE B. TEMPLE. NORFOLK.
LOUISE CREIGHTON. SAMUEL A. BARNETT.
WILLIAM R. GOWERS, M.D. ARTHUR B. RENDEL.
HAVERSHAM. FRANK LLOYD.

St. Peter's Rectory, Saffron-hill, London, E.C., August 26th, 1911.

PRISM BINOCULARS.

Messrs. Leitz of Oxford House, Oxford-street, W., have issued a new list of prism binoculars which contains illustrated descriptions of several new models, including a glass giving a magnification of × 4 mounted as a theatre glass; one with a magnification of × 8 with an enlarged field of view and extra stereoscopic effect; one with a magnification of × 10; and another with a magnification of × 12. The catalogue also includes a useful note on the choice of a field-glass, together with information on the optics of the subject. The name of the firm is a sufficient guarantee for the high degree of accuracy which the manufacture of prism field-glasses requires, and the improvement in glass-grinding machinery and the introduction of new metal alloys have made it possible for Messrs. Leitz to produce prism binoculars highly efficient in power and moderate in price.

A USEFUL COMPENDIUM OF NEWER DRUGS.

FOR those physicians who understand German Riedel's Berichte will prove of service as a guide to the progress that is taking place in regard to new laboratory products and other remedies. It consists of four parts, in the first of which are described the investigations and analytical work done in the laboratories of the J. D. Riedel Co.; in the second the pharmaco-therapeutic progress of 1910 is described; the third is a mentor for the names, composition, qualities, and uses of the newer remedies, specialities, and technical products; while the last gives a list of the special preparations of the firm. A tabular appendix gives the specific gravities of a large number of liquids contained in the last German Pharmacopœia. The alphabetical order is followed throughout the work, thus making reference easy, while the detailed information as to doses and uses of the various preparations is reinforced by ample references to the literature. Those of our readers who may desire a copy should apply to the J. D. Riedel Co., 54, Cannon-street, London, E.C.

Annoyed must be perfectly certain of his facts before making the complaint. For example, he must not state that the druggist had not a certain preparation in stock unless he can prove it. But if he is sure of his ground, he is advised to complain to the Pharmaceutical Society who would certainly recognise that such proceedings are wrong and would, we believe, remonstrate with their member.

R.N. (*? Portsmouth*).—Our correspondent has not enclosed for our private information his name and address with his interesting letter.

G. C. W.—As far as the medical profession is concerned it seems to us that the course advocated is now too late.

Assistant Physician.—Very good, but, alas, it has appeared before.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced for September, 1911:—

April–October.—Rome Exhibition (United Italy's Jubilee).
,, 29th–Oct. 26th (Turin).—International Exhibition.
May 3rd–Oct. 31st (Glasgow).—Scottish Exhibition.
,, 6th–Oct. 31st (Dresden).—International Hygiene Exhibition (British Section opens June 14th).
May 12th–Oct. 31st (London, Crystal Palace).—Festival of Empire Imperial Exhibition. (Profits to King Edward VII. Hospital Fund.)
May 18th–October 31st (London, Shepherd's Bush).—Coronation Exhibition.
,, 19th–Oct. 31st (London).—Earl's Court Exhibition.
August 28th–Sept. 11th (South-East of France).—Eleventh "Voyage d'Etudes Médicales."
,, 30th–Sept. 2nd (Berlin).—Third International Laryngo-Rhinological Congress.
,, 30th–Sept. 6th (Portsmouth).—British Association.
Sept. 2nd–9th (London).—Bakers' and Confectioners' Exhibition.
,, 4th–9th (Yarmouth).—Sanitary Inspectors' Association. Annual Conference.
,, 5th–7th (Philadelphia).—American Electro-therapeutic Association.
,, 9th–11th (Ostend).—Fifteenth Flemish Nature and Medical Congress.
,, 11th–13th (Vienna).—German Urological Society.
,, 11th–13th (Berlin).—Third International Conference on Infantile Mortality (*Gouttes de Lait*).
,, 11th–16th (The Hague).—Thirteenth International Congress on Alcoholism.
,, 12th–15th.—Celebration of the 500th Anniversary of the Foundation of the University of St. Andrews.
,, 18th–23rd (Sydney).—Australasian Medical Congress.
,, 18th–23rd (Paris).—International Conferences of Genetics.
,, 23rd–Oct. 21st (London, Olympia).—Electrical Exhibition.
,, 24th–30th (Karlsruhe).—Eighty-third Meeting of German Physicists and Physicians.
,, 26th–28th (Louisville, Ky.).—American Association of Obstetricians and Gynecologists.
,, 26th–30th (Brussels).—Third Congress of the International Society of Surgery and Exhibition of Fractures.
,, 28th–30th (Dresden).—International Congress for the Protection of Mothers and Sexual Reform.
,, 29th (Edinburgh).—Association of Veterinary Officers of Health. Annual Meeting.
,, 30th (Bruges).—Sixth Belgian Congress of Neurology and Psychiatry.
September (Genoa).—International Exhibition Marine Hygiene.
,, (Turin).—Congress of the Association of Italian Railway Physicians.
,, (Manchester).—Second Conference of the British Hospitals Association.
September–November (Antwerp).—International Exhibition of Alimentation, Brewing, Wines, and Liqueurs.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Dr. Simson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Clinical Theatre, London Hospital, Mile End-road, E.

MONDAY.—2 P.M., Demonstration in Clinical Medicine:—Dr. Wall: Pulmonary Diseases.
TUESDAY.—2 P.M., Demonstration in Clinical Medicine:—Dr. Grünbaum: Diseases giving rise to Morbid Renal Excretion.
THURSDAY.—2 P.M., Demonstration in Clinical Medicine:—Dr. Head: Diseases of the Nervous System.
FRIDAY.—2 P.M., Demonstration in Clinical Medicine:—Dr. L. Smith: Diseases of the Heart.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London, (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.). Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (6th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's 2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (7th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.)., Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (9th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.), Hospital operations are performed daily.

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1911, which was completed with the issue of June 24th, were given in THE LANCET of July 1st.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1911 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 30th, 1911.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 24	29·82	S.E.	...	115	75	60	62	66	Cloudy
,, 25	29·84	S.W.	...	123	75	59	61	64	Cloudy
,, 26	30·02	S.W.	...	121	75	58	59	63	Fine
,, 27	30·01	S.W.	...	104	73	58	60	64	Cloudy
,, 28	29·92	S.W.	..	129	75	62	64	67	Cloudy
,, 29	30·04	W.	0·06	126	75	58	60	63	Fine
,, 30	30·19	W.	...	116	73	68	57	60	Fine

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